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Address all communications to A. S. Barr, Department of Education, University of Wisconsin, Madison, Wisconsin.

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JOURNAL *of* EDUCATIONAL RESEARCH

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RECENT FINDINGS IN THE STUDY OF THE PHYSICAL GROWTH OF CHILDREN

J. W. M. ROTHNEY
University of Wisconsin

Editor's note: It is always difficult to keep abreast with the splendid researches reported and in progress relating to the many aspects of education. The author presents a discriminating review of recent researches relating to the physical growth of children.

ALTHOUGH some investigators in the area of physical growth of children have maintained that the information obtained would be of value if no practical applications were ever made, a careful review of the literature in the field and a study of the research now being carried on indicates that the investigators have usually had practical values in mind. They have been for the most part concerned with the discovery of correlates of behavior and mental abilities in physical growth, and the hope that such correlates might be discovered along with the ready availability of physical growth data continue to make this field of research very popular. Meredith[1] presents a bibliography of 83 studies of physical growth during the period from 1858 to 1900 and his review is limited to physically normal American white children within the age period of three to eighteen years. Three recent digests and reviews of the subject which contain extensive bibliographies have been concerned with the applications of the study of growth to the field of education.[2]

The summary to follow indicates that the investigators of physical growth have sought information concerning:

[1] Meredith, H. V. *Physical Growth of White Children,* Monographs of the Society for Research in Child Development, No. 2, (Washington, D. C.: National Research Council, 1936).

[2] See the Review of Educational Research for April 1933, Vol. III, No. 2; February 1936, Vol. VI, No. 1; and February 1939, Vol. IX, No. 1. Each of these compilations include bibliographies of several hundred titles.

1. The general nature of the growth curve
2. Individual, age, sex and ethnic differences in growth curves
3. The kinds of growth curves of different structures
4. The nature, causes, and results of abnormal growth
5. The relation of physical growth to mental growth
6. The relation of physical growth to abnormalities
7. The relation of changes in physical growth to environmental changes

It is the purpose of this survey to examine the results of the researches in this area to determine some of their implications for education and for further research in this field.

Methods of Studying Growth. All physical growth data may be divided into two categories, namely cross-sectional and longitudinal. The securing of cross-sectional data requires only a single measurement of each individual within a group. Thus, if we want to find the average difference in height between eight and nine-year-old children in a certain area, we measure all the eight and nine-year-old children, compute the averages of the two distributions and subtract one from the other. If we were to use the longitudinal method, we would measure all the eight-year-old children, wait for a year and measure them again. This procedure may be continued over a period of years. The two procedures serve different purposes. If one is interested merely in *average* growth and certain factors such as ethnic origin, sex, and population factors have been controlled, the first may be adequate, but if one is interested in individuals within the group the latter method seems essential. Cross-sectional data may be very misleading for the study of individual growth.

There is no doubt, for reasons that appear below, that it would be desirable to have longitudinal data for most or all growth studies. But such data are difficult to obtain. They involve great expense, because populations change,[3] because changes in experimental procedures are often introduced as the result of discovery of errors in past methods (and the need for such changes is not often seen in cross-sectional data), because it is difficult to get large populations measured at equal intervals of time, because certain omissions in the data will occur (due to illnesses and other factors which

[3] See Dearborn, W. F. and Rothney, J. W. M. Predicting The Child's Development, Sci–Art Publishers, 1941. Only 25% of an original population of 3500 were available at the end of the Harvard Growth Study which covered 12 years.

influence attendance at school) and because it is difficult to get continuity among competent personnel to carry on longitudinal studies. Yet since the value of such cumulative data is evidenced by the fact that repeated measurements of the standing height of only 248 cases over a twelve-year period are equivalent to 270,000 cross-sectional measurements of standing height,[4] the difficulties seem worth overcoming. It should be unnecessary to point out that cross-sectional data are much easier to secure than longitudinal data, but we shall attempt to point out that *average* measurements (and the *average* curves derived therefrom) have little significance for the study of individual growth. We shall also attempt to show that the overlapping among age, sex, and ethnic-origin groups is so great as to preclude significant findings for education from the use of cross-sectional data.

Excluded from the discussions below are those studies in which the sexes have not been differentiated, in which ethnic groups are not well isolated, in which unstandardized techniques have been used, in which the populations are small or are not sufficiently described, and those in which statistical naiveté has distorted findings. When such rigorous criteria are applied the field of physical growth shrinks from an extensive and sprawling area to the study of a comparatively few longitudinal investigations.[5]

Facts of Growth. Enough longitudinal studies have now been conducted to enable us to describe the general form of linear physical growth curves. We can say with a great deal of assurance that growth is very rapid from birth to the age of two, (see figures 1 and 2) that it tends to continue at a diminishing rate until a period approximately three years before the advent of puberty, rises rapidly (more rapidly than previous cross-sectional studies had revealed) until puberty is reached, and then falls away quickly to end points (where the increase is smaller than the errors of measurement) at ages between seventeen and nineteen. The shape of the curves for both sexes is almost identical but the timing of the adolescent spurt disturbs the parallelism of the growth curves.

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[4] For statistical evidence of this statement, see Shuttleworth, F. K., *Sexual Maturation and the Physical Growth of Girls Age Six to Nineteen.* Monographs of the Society for Research in Child Development, Volume II, No. 5, (Washington, D. C.: National Research Council, 1937).

[5] It is not implied hereby that all good studies are to be considered or that we can always determine goodness. Space and ability limit such an attempt.

Weight curves are similar except for the fact that the rate decreases so rapidly from ages three to ten that the curves are convex in shape.[6] These facts are shown in the growth curves of Figures 1, 2, 3, 4, and 5. Shuttleworth, using the Harvard Growth Study data, has shown that when size is eliminated as a variable, the patterns of growth of individuals are markedly similar. (See figure 3.)

The securing of average curves of physical growth have obscured one of the chief reasons for studying such growth and have therefore encouraged the seriously fallacious procedures of interpreting individual growth in terms of the average of sex, age, and ethnic origin groups. No doubt these average curves are of considerable interest and perhaps of some value as a point of reference in describing the present status of an individual but we must seriously question their value in the light of their frequent misinterpretation and misapplication.

It is quite possible that serious implications for mental hygiene may occur when an individual is grossly under-size for his age. The girl who matures late is likely to be shorter than pupils of the same age who are already matured. She will not have developed secondary sex characteristics and may well wonder whether she is normal. The girl who matures early is likely to be taller than her classmates of the same age and the combination of unusual height and development of secondary sex characteristics may make her, too, wonder about her own normality. That such subjects can seldom be regarded as in any way abnormal, we now know, in view of findings as to the greater range of individual differences and as to the inadequacy of the criterion (age) used in the average-for-age curves to which researchers in physical growth have referred and by which school children have too often been appraised.

Age is not a good criterion of the physical growth attained. From the files of the Harvard growth study, the records of 267 girls whose standing height measurements from ages 8 to 17 were available, were drawn at random

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[6] Meredith, H. V. *The Rhythm of Physical Growth,* Iowa Studies in Child Welfare, XI (1935).
Boynton, Helen. *The Physical Growth of Girls,* Iowa Studies in Child Welfare, XII (1936).
Shuttleworth, F. K. *Op. Cit.*
Dearborn, W. F. and Rothney, J. W. M. Predicting The Child's Development, Sci–Art Publishers, 1941.
Bayly, N. "Growth Changes in Bodily Size and Proportions During the First Three Years, *Biometrika,* XXVII (1935).

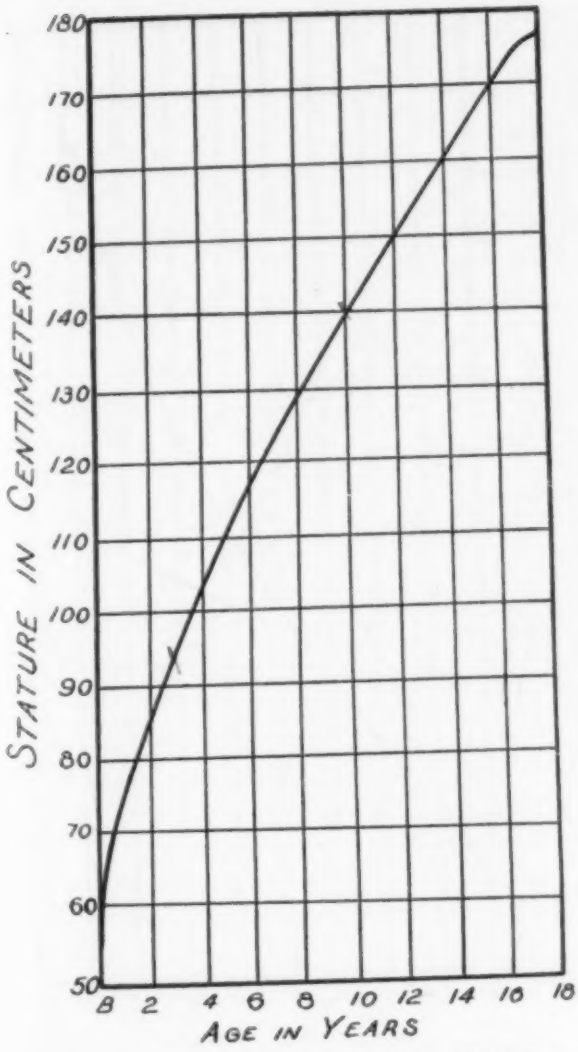

FIGURE 1—Growth in Stature of Iowa City Boys. (From Meredith, H. M., The Rhythm of Physical Growth, Iowa Studies in Child Welfare. Vol. II, No. 3, 1935.)

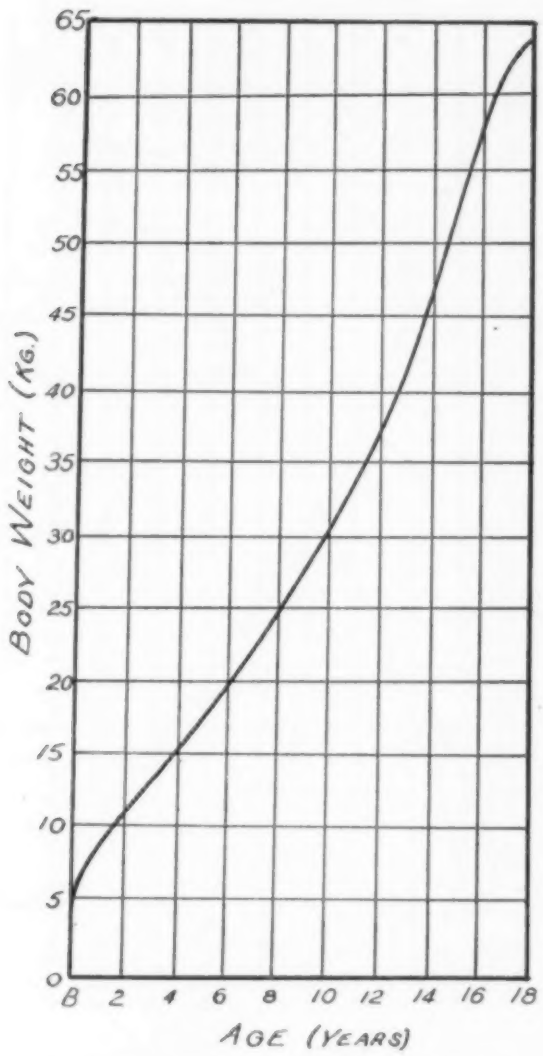

FIGURE 2—Growth in Body Weight of Iowa City Boys. (From Meredith, H. M., The Rhythm of Physical Growth, Iowa Studies in Child Welfare. Vol. II, No. 3, 1935.)

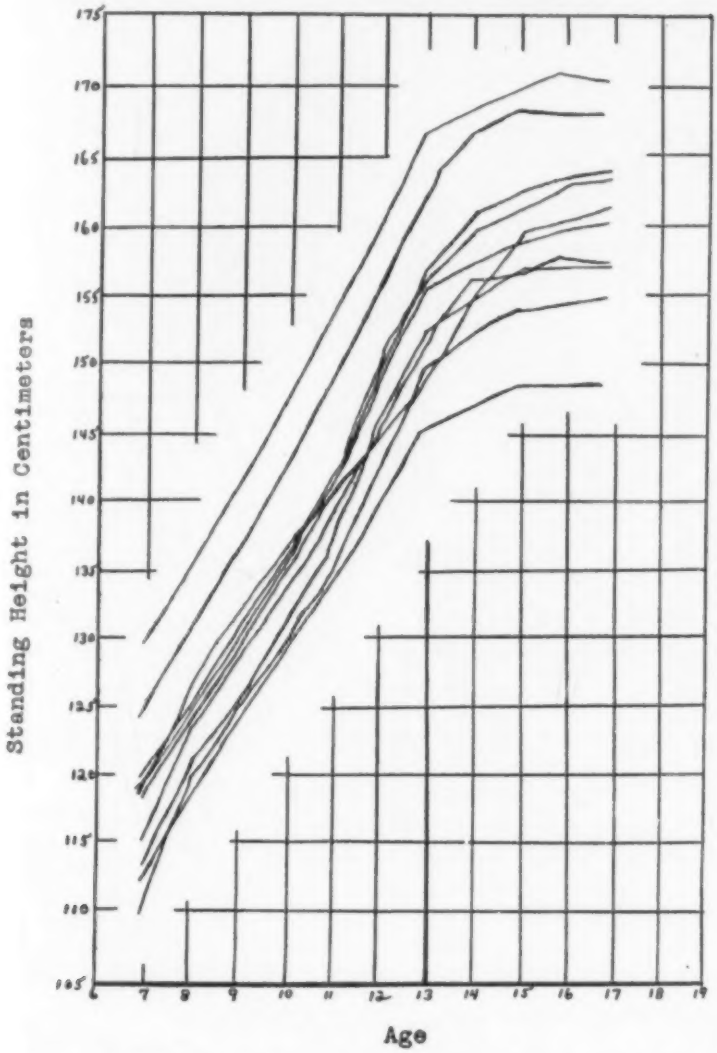

FIGURE 3—Individual Growth Curves in Standing Height Plotted to Even Years of Ten Girls Who Were Measured Within Three Months of Birthdays and Who Menstruated Between Age 13–0 and 13–3. Harvard Growth Study Data. Graph by F. K. Shuttleworth.

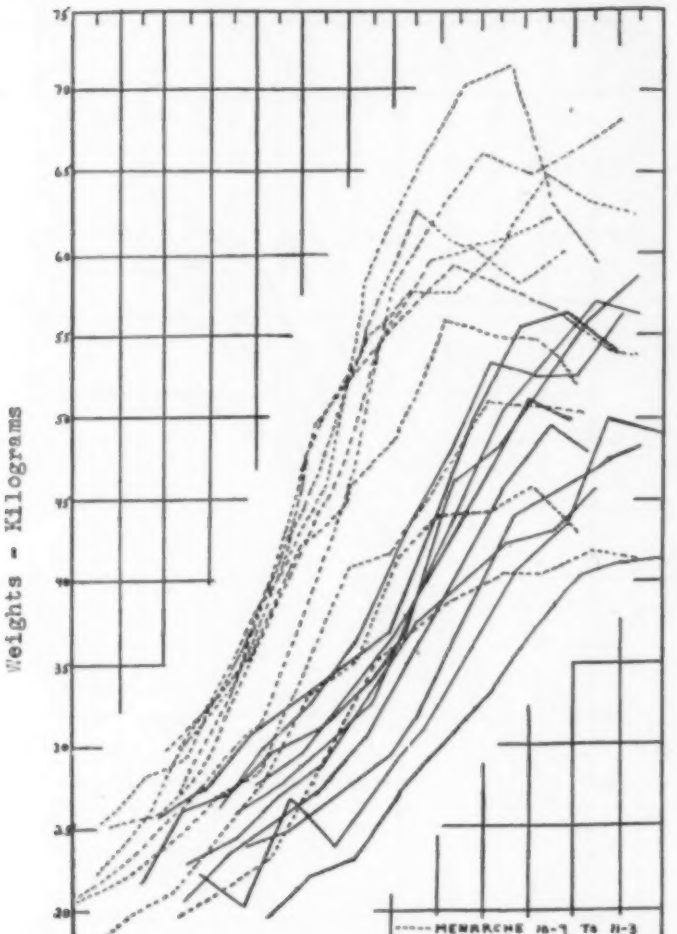

FIGURE 4—Individual Growth Curves in Weight Plotted to Exact Ages of Ten Cases Menstruating Between 10–7 and 11–3 (Dash Lines) and of Ten Cases Menstruating Between 14–5 and 15–2 (Solid Lines). (After Shuttleworth) Data from the Harvard Growth Study.

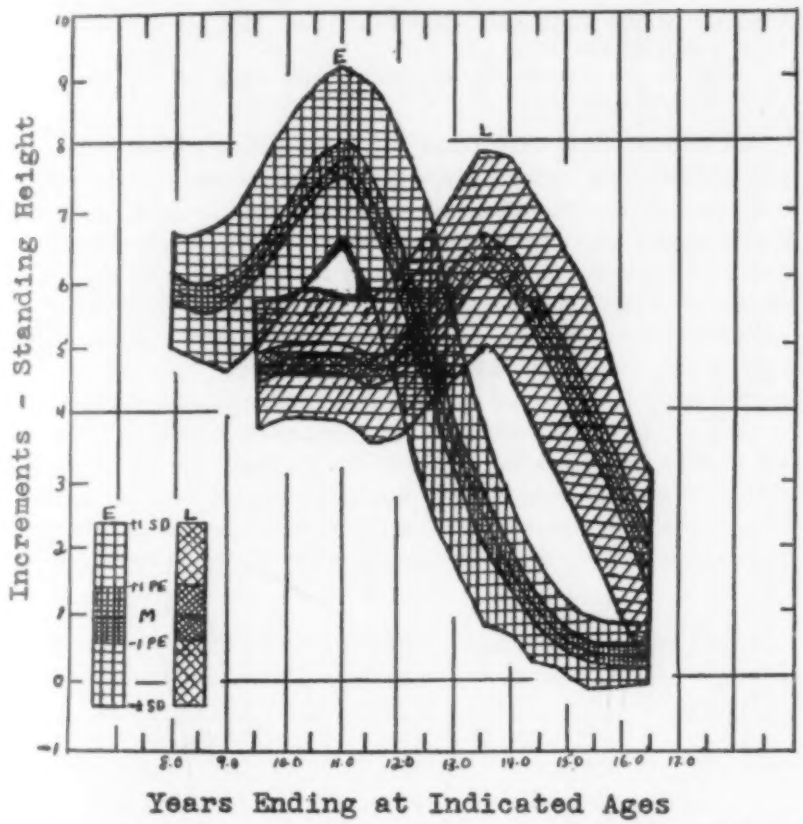

FIGURE 5—Average Annual Increments in Standing Height, Probable Errors of Means, and Standard Deviations of Distributions of Increments for Early and Late Maturing Groups of Cases. After Shuttleworth. Data from Harvard Growth Study.

for this study. The overlapping of age groups in standing height is indicated in figures 6 and 7. Using the distribution of standing heights for twelve-year-old girls we find that the twelve-year curve cuts off:

1% of the 7-year-old distribution and 62% of the 13-year-old distribution
5% of the 8-year-old distribution and 43% of the 14-year-old distribution
17% of the 9-year-old distribution and 30% of the 15-year-old distribution

33% of the 10-year-old distribution and 25% of the 16-year-old distribution
59% of the 11-year-old distribution and 26% of the 17-year-old distribution

Now these figures show rather clearly the difficulty involved in classifying a child by age in the study of his physical growth. If a child is not, at age twelve, at the twelve-year level, there may be some comfort in discovering that the difference between eleven and twelve-year-old children is not so great as average differences imply for there is a 59% overlapping between the heights of these age groups. The futility of classifying physical growth standards by age and the uselessness of worrying because a child is not up to the average for his age should be apparent.

But if age is not a good criterion of development, what shall be used? Certainly age has the advantage of being objectively capable of verification and is still (notwithstanding the facts stated above) the closest correlate of physical growth obtained up to this time. The only effective substitute for a "comparison-with-average-for-age" technique is that of considering

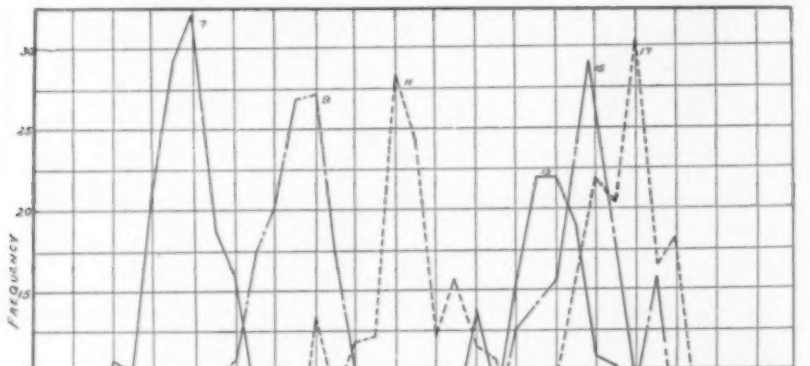

FIGURE 6—Overlapping of Distributions of Standing Height Measurements of 167 Female Subjects of the Harvard Growth Study Measured at Alternate Years from Ages 7 to 17 Inclusive.

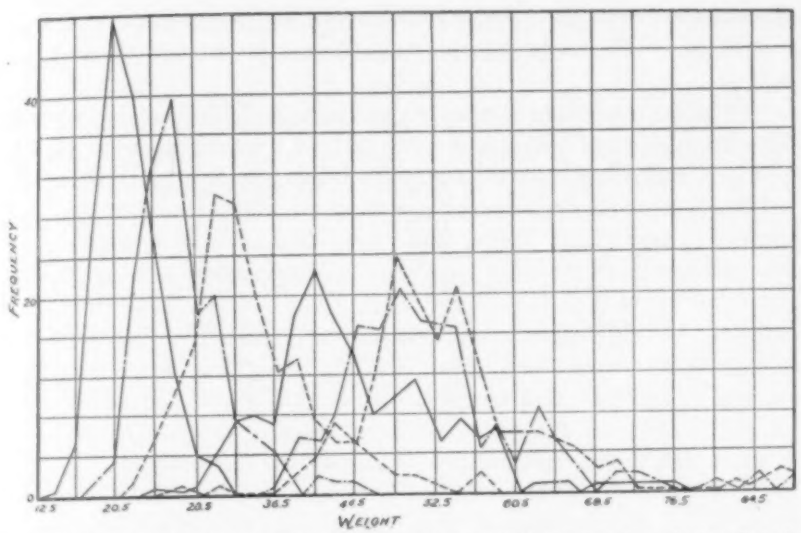

FIGURE 7—Overlapping of Distributions of Weight Measurements of 167 Female Subjects of the Harvard Growth Study Measured at Alternate Ages from 7 to 17 Inclusive.

the previous growth record. If a child is unusually short at birth, but maintains a fairly regular growth rate without any too prolonged plateaus, he will be normal *for him* even though he may be several centimeters below the average-for-age standards.[7]

Still another factor must be considered in considering the physical status of the individual. This is the problem of different growth rates *within* any one person. In Table I the figures indicate distance above and below the average of measurements of sixteen-year-old boys in terms of "standard score times ten"* units. Thus a figure of +10 indicates a measurement one

[7] Too little is known yet about factors influencing the rate of growth of children to provide advice concerning what might be done to hasten it. That it can be done at all is still not proven beyond reasonable doubt.

* A standard score is obtained by subtracting an obtained score from the average score of the group and dividing by the standard deviation. This procedure gives us the extent of variability from the average in terms of a standard unit for the group. A zero score would indicate that the measurement was average for the group, a plus score that it was above the average and a minus score below. To eliminate decimals we have rounded all to one decimal place and multiplied by ten. Thus a score of 20 means that an individual's measurement was 2.0 standard scores above the average of the group of which he was a member. Scores greater than 3.5 are very rare.

standard score above the mean, a zero indicates an average measurement and a score of —20 would indicate a position two standard scores below average.

With this procedure in mind we may turn to Table I and examine the deviations that occur within one individual with respect to the average of his group. Individual *A* is consistently far *below* average in all measurements and *B* is consistently far *above* average in all measurements. *C* is of average height with very slightly shorter than average legs but with a slightly longer than average trunk. His iliac and chest measurements are above average, as is also his weight. Individuals *A*, *B*, and *C* are the kind that would ordinarily be considered as representative of certain types and described as (A) short, narrow and shallow, (B) large, broad and deep, and (C) as average. It must be noted however, that, even in these cases which would be usually classified as types, there is considerable variation in the extent to which they deviate from average in each of the measurements.

Individual *D* is below average in height, trunk, and legs, and one might expect therefore that he would be of light weight, but we find that he is above average. His chest is of average depth. *D* might be described, then, as short, broad, and shallow. *E* is like *D*.

F is of average height with short legs and long trunk, but his iliac is broad, and he is slightly above average in chest measurement. The greater than average width and depth measurements account for his more than average weight.

G is taller than average, has long legs and short trunk with nearly average chest and iliac measurements. His weight is significantly above

TABLE I

SAMPLES OF INDIVIDUAL DEVIATION IN BODILY CHARACTERISTICS FROM THE MEAN OF A GROUP OF 533 SIXTEEN-YEAR-OLD BOYS. FOR INTERPRETATION OF NUMBERS, SEE PRECEDING TEXT. DATA FROM THE HARVARD GROWTH STUDY

Individual	Standing Height	Weight	Leg Length	Trunk	Iliac	Chest Depth	Chest Width
A	−37	−37	−23	−40	−39	−29	−35
B	+28	+25	+22	+24	+29	+18	+25
C	0	+ 5	− 2	+ 1	+ 2	+ 4	+ 2
D	− 5	+10	− 6	− 3	+ 8	+ 1	+22
E	−12	+ 3	−14	− 7	+ 9	+ 1	+ 4
F	+ 1	+13	−10	+16	+28	+ 5	+ 6
G	+ 9	+28	+26	−15	+ 2	+ 4	− 5
H	−15	− 7	−18	− 3	+ 7	− 8	+ 3

average. *G*'s measurements suggest that very long legs, even combined with a short trunk, make for greater than average weight.

Individual *H* is short and light. He has a short trunk and legs, a narrow and shallow chest, but his iliac is above average width. His weight is not so far below average as would be expected in consideration of his height. This condition appears to be due to the above average width of the iliac.

It appears from the above data that we must not continue to think of the growth of the individual, but of his *growths*.

Some aspects of physical growth may be illustrated by the following figures. The first of these indicates that in general girls who are significantly above the average in height at age seven are likely to be significantly taller than the average at age seventeen. The terms *in general* must be kept very much in mind for prediction of position with respect to the average of one's group at any time is a hazardous procedure. In figure 8, 5 cases are shown whose standing heights were exactly the same at age 7. The variability of each individual from her previous position in relation to the group and in relation to her own previous position is indicated by the finding that these five cases who were of the same height at age 7, vary to such an extent in growth rate that at no other age could one have predicted that these girls would have identical measurements at age 7. Similarly in figure 9, eight girls whose stature measurements at age 17 are identical, vary so greatly that it would have been impossible to have predicted identical heights at the last age measured. The variation in growth exhibited by eight girls whose stature measurements were identical at age 12 (figure 10) is

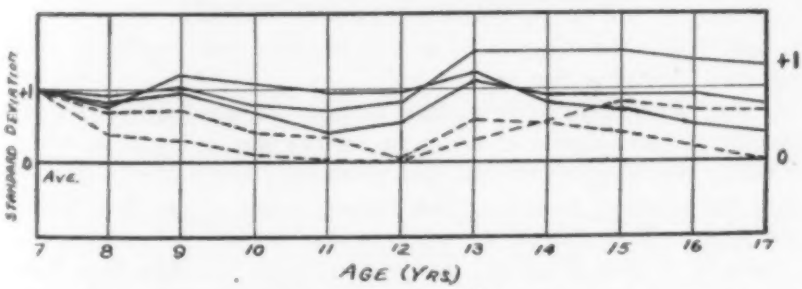

FIGURE 8—Variability from the Average at Each Age of Five Girls Whose Standing Height Measurements Were Identical at Age 7.

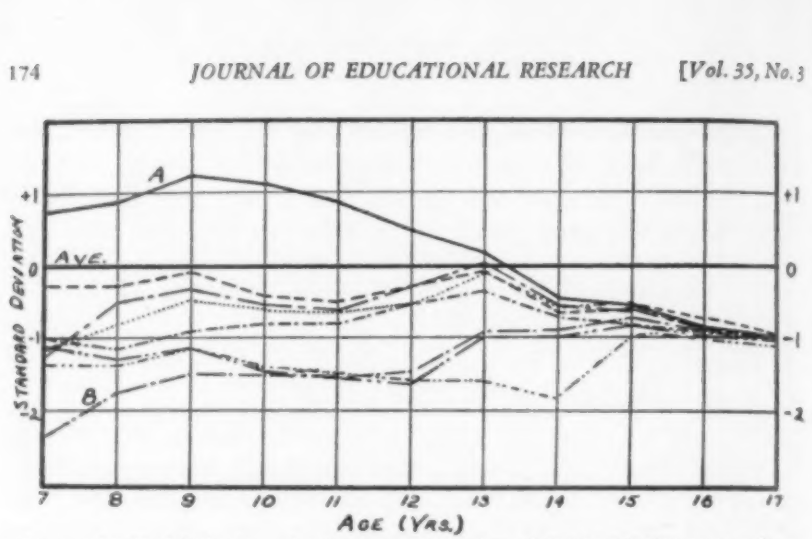

FIGURE 9—Variability from the Average at Each Age of Eight Girls Whose Standing Height Measurements Were Identical at Age 17.

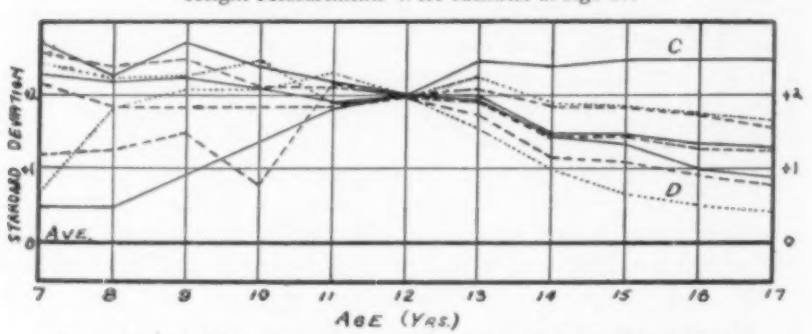

FIGURE 10—Variability from Average at Each Age of 8 Girls Whose Standing Height Measurements Were Identical at Age 12.

so great that measurements taken at any other year would not have suggested identity at that age.

The variability in deviation from averages for age and from previous patterns shown in figures 8, 9 and 10, indicate the futility of attempting to predict future growth of individuals in standing height of any other age. Note the differences between growth toward identity at age 17 of cases A and B in figure 9, and the difference between patterns of cases C and D (whose curves cross at age 12) in figure 10. These cases have been chosen at random for demonstration here but many such contrasts can be found in the records of the Harvard Growth Study.

Findings such as these indicate that prediction of standing height from early measures of standing height is so precarious that it can have little value. Meredith[8] has shown that prediction of the height of boys of North European origin at age eleven on the basis of measurements of standing height taken at age seven can be made with errors of not more than 2.5 centimeters in 95 percent of the cases. Such prediction is probably as accurate as we are likely to obtain, but it is done at a time when the growth is unusually stable. Wilson[9] has shown that early and late prediction of final height and weight is superior to prediction at adolescence in the case of girls. Both of these investigations used longitudinal data from the Harvard Growth Study.

The problem of the relationship of height and weight and the adequacy of height-weight tables has received much attention from educators and from the medical profession for general practice in both education and medicine requires the taking of length and weight measurements. The practice of taking such measurements has become so universal, the faith that is placed in the action taken on the basis of such measurements so great, and the use of the height-weight table so widely accepted that they demand careful scrutiny. If such practices and such faith are misplaced, then a great deal of waste motion is being carried out.

The results of the Harvard Growth Study indicate quite clearly that the faith in them is misplaced. This study has shown that among certain groups, height is less closely correlated with weight than are measurements of the width of the hips and a composite measure of the chest. Of course, standing height is more easily measured than each of the other measurements and the difference between the size of the correlations with the criterion are so small that *if a single measure is to be used* then standing height should be chosen simply because it is easy to measure.[10] But our

[8] Meredith, H. V. "The Prediction of Stature of North European Males Through the Elementary Years". *Human Biology,* (1936), Pp. 279–283.

[9] Wilson, E. B. "Heights and Weights of 275 Public School Girls for Consecutive Ages, 7 to 16 Years Inclusive". *Proc. National Academy of Sciences,* 1935, 21, 633–634.

[10] Analysis of our measurements shows, however, that such measurements are likely to be grossly in error if taken by a single measurer. The technique used in the Harvard Growth Study is recommended. See Dearborn, W. F., Rothney, J. W. M. and Shuttleworth, F. K. *Data on The Growth of Public School Children,* Monographs of the Society for Research in Child Development. Vol. III, No. 1 National Research Council, Washington, D. C. 1938.

studies also show that a single measure should not be used if we are to avoid many errors and if we do face the fact that width and depth of the body contribute to weight fully as much as does standing height. The reader should turn back to Table I and see the differences in width, length, and depth of the body of several cases selected at random from the files of the *Harvard Growth Study*.

In order to emphasize the value of considering the various measurements of the body in relation to weight, the author examined the height, width, depth, and weight measurements of 533 sixteen-year-old subjects of the *Harvard Growth Study*. From a study of the intercorrelations of these measurements it was possible to derive an equation for the prediction of what an individual ought to weigh in view of his skeletal measurements.[11] The equation which was derived predicts weight 20 per cent more effectively than any of the various indices of body build which have been presented, for ages between 14 and 18, for both sexes.[12] The equation with an illustration of its use follows:

Weight (kilos) -1.73 Chest Depth $+ 2.11$ Chest Width
$+ 0.28$ Standing Height $+ 1.60$ Iliac $- 118.4$

We may illustrate the use of the procedure by an actual case (#2900) chosen at random from the files of the *Harvard Growth Study*. At age 16, this boy had the following measurements:

Chest Depth	16.4
Chest Width	23.6
Standing Height	176.9
Iliac Width	27.2

Multiplying this through by the derived weights of the equation, we get:

16.4 x 1.73 =	28.2
23.6 x 2.11 =	49.8
176.9 x 0.28 =	49.5
27.2 x 1.60 =	43.5
Total =	171.0

Subtracting correction factor for weighted averages, we find our subject's—

[11] Dearborn, W. F. and Rothney, J. W. M. Basing Weight Standards Upon Linear Bodily Dimensions. *Growth* Vol. II, No. 2, 197–212, 1938.

[12] The equation was obtained for 16-year-old boys but was found to be useful for both boys and girls between the ages of 14 and 18.

Normal weight to be	52.6 kgs.	(115.9 lbs.)
Actual measured weight	54.0 kgs.	(119.0 lbs.)
Difference (overweight)	— 1.4 kgs.	(3 lbs.)

The Baldwin–Wood Table for this boy gives a weight of 145 pounds. He would ordinarily be considered to be 145–119 or 26 pounds underweight.

The equation given above has two values. The first and most practical of such values is, of course, its presentation for use as a substitute for the height-weight table and its second is the emphasis it puts on giving due weight to factors other than height in considering weight measurements.

The chief assumption involved in our equation technique other than the usual statistical assumptions is that the *average* weight for a given age group is the best weight. Empirical checks seem to validate such an assumption. We have substituted the above equation in this paper for the customary height-weight table (or references to it) in such papers and we do so simply because we wish to emphasize the need of more than the usual height-weight analysis in the study of the growth of children. When we make such a substitution, we find it necessary to discard or devaluate the importance of the numerous investigations which attempt to show the relation between over-weight and under-weight, conditions in children and their mental abilities, school achievement, and abnormal behavior. We can now be sure that a large proportion of cases diagnosed as being under or over weight were incorrectly classified. If over-weight and under-weight children do respond to tests and to school situations in a different manner than "normal-weight" children do, we shall have to re-define our criteria of classification before we can discover such relationships between weight, behavior and school performance.

The above discussion leads directly to the consideration of the problem of body build. There are so many good reviews of the literature concerning attempts to classify individuals into types of body build that it is quite unnecessary to repeat them here.[18] It is sufficient to say that the subject

[18] See Kretschmer, E. *Physique and Character* (New York: Harcourt Brace, 1925).

Allport, G. W. *Personality: A Psychological Interpretation* (New York: Henry Holt and Co., 1937).

Cabot, P. S. DeQ. *The Relationship Between Characteristics of Personality and Physique in Adolescents*, Genetic Psychology Monographs, XX, No. 1 (February, 1938).

has been of considerable interest for many centuries and the attempt to find correlates of body types has resulted in much bad psychology and worse statistics. There seems to be little reason to doubt now that such procedures have no value except in very rare cases where growth has been so unusual that the individual has become a freak.

In order to establish a type in physical growth, it seems necessary to: (a) Simplify the measurement so that exact definition can be made. [Does Kretchmer's pyknic type for example mean an individual who is thick through at hips and chest and thigh or at only one of these points of measurement? How much homogeneity of the possible classification is required? Does the type include the wide person at all points? These questions show the need for definition of "pyknic" in terms of all variables that go to make up the whole. Could an individual be a "pyknic" if he was narrow or shallow at any of the points of measurements?] (b) Indicate a point of reference from which critical measurements are to be derived. Such requirements are necessary if we are to accept the facts of variability of growth in various dimensions.[14]

When body type studies are examined in the light of these criteria their value must be questioned. The safest criterion (and the only one which is in line with the other considerations) is variability from an average of similar groups. Thus if one is to classify as types "fat" and "thin" people, he will have to determine who is fat and who is thin in terms of the extent to which they deviate from the average. It will also be necessary to define "fat" and "thin" in terms of the points of measurement for it is quite possible to find individuals who are fat at the hips and not at the chest, and fat at the thighs without being fat at the chest. The problem then becomes one of measuring variability from the average and the selection of a critical figure for each measurement. Thus if we are classifying individuals upon the basis of standing height at a certain age we must determine the average height of that age group and decide who is tall or short in terms of such an average. All individuals who were 10 centimeters above the average height might then be described as tall. All those who were 10

[14] We dismiss the discussion of most indices as descriptive of body build as being not worthy of consideration. Measurements are often combined in a simple manner without weighting and therefore imply relationships which simply do not exist. One of the most useful is the Pryor and Lucas Index (Journal of the American Medical Association, Vol. 97, 1935) which remains remarkably constant over the growth period but is not closely related to weight.

centimeters below the average might be classified in a short group. If the average was 100 centimeters then all individuals taller than 110 centimeters would be tall and all below 90, short. Ninety and 110 would be critical scores.

As far as can be discovered, such procedures have not been carried out, and the reason for not doing so (apart from the fact that few people have thought it necessary to do it) appears to lie in the difficulty of finding "types" when such procedures are used. It appears safe to assume that, if our rigorous techniques were employed in the repetition of the body-build studies, which are reported in the literature, different results and implications for the field of education and psychology might be found which would be much more significant than they are at the present time. Such a statement will not, we hope, prevent the teacher from taking due care that any abnormality of growth be given consideration in the treatment of a child. The very fat (pyknic) boy may need more attention than others of his group not because his condition predisposes him to certain types of behaviors but simply because it may bring about certain types of behavior on the part of his classmates. And since there is no positive assurance that his condition will remain an unusual one, the increased attention may be only a temporary requirement.

Relationships in Growth. The problem of relationships between physical growth and various educational and psychological processes has received a great deal of attention, but the initial expectancy of valuable results for education has been dissipated by the results of experimental investigations. Correlation coefficients between mental test scores and measures of physical development obtained in cross-sectional data rarely exceed .20 and the correlation coefficients show decrements until they approximate zero at the adult level.[15] When several measures of each of these kinds of data are weighted by regression techniques the correlation coefficients rarely vary significantly from that figure.[16] These figures indicate, of course, that the obtaining of one measure provides little material for the prediction of the other.

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[15] Abernathy, Ethel M. *Relationships Between Mental and Physical Growth.* Monographs of the Society for Research in Child Development, I No. 7, (Washington, D. C.: National Research Council, 1936).

[16] Dearborn, W. F. and Rothney, J. W. M. Predicting the Child's Development, Sci-Art Publishers, 1941.

The statements above refer to results of studies in which large populations are used. They refer to children in the mass. Jones[17] has shown that such correlation coefficients may hide significant relations for individuals since clinical deviates may be lost in the mass, since, for certain traits, negative relationships may reduce the prevailing positive relationships, since there may be correlation of rates without correlation of amounts, and since relationships may involve functionally significant patterns of physical characteristics which the correlation coefficients derived from single patterns fail to reveal. Dearborn and Rothney[16] have indicated that the usual correlation coefficients between physical and mental measurements indicate only that there is no significant relationships between *structure* on the one hand and the *use of structure* (as well as mental tests measure use) on the other. When the many factors which may influence use (educational opportunity, adequate motivation, etc.) but which may not at the same time influence structure are considered, the low correlation coefficients should not be unexpected.

Whatever the cause, we can be sure that the procedures which have commonly been used in attempts to discover relationships between mental and physical growth are not likely to bring positive results. Several attempts have been made to discover relationships by plotting longitudinal growth curves of these factors in an attempt to discover whether there were concomitant variations in development.[18] Since such procedures also fail to show close relationships, attempts have been made to provide explanations for such findings. One of the most likely explanations appears to be found in the difference in end points. If mental growth continues as long as some investigators have recently maintained[19] (much beyond adolescence), and if these results are not artifacts of test construction, then we have been drawing curves which represent great differences in progress toward end-points,

[17] Jones, H. E. "Relationships in Physical and Mental Development", *Review of Educational Research,* (April, 1933 and February, 1936).

[18] Abernathy, Ethel M. *Op. Cit.*

West, E. D. "Stage of Ossification as a Measure of Growth and Its Relationship to Intelligence Test Score", *Harvard Teachers Record,* (1936). (The growth curves presented in West's unpublished thesis are on file in the Library of the Harvard Graduate School of Education.)

[19] Long, H. H. and Dearborn, W. F. "A Curve of Mental Growth," in Predicting The Child's Development, Sci–Art Publishers, 1941.

Jones, H. C. and Conrad, H. S. "The Growth and Decline of Intelligence". *Genetic Psychology Monographs,* XIII, No. 3. (Worchester, Mass.: Clark University Press, 1933).

even though the measurements were obtained at identical chronological ages. The longitudinal method applied to individual curves ought, it appears, to provide more valuable information concerning growth relationships but even such useful techniques will need much refinement before we shall be able to state with any great assurance that relationships between mental and physical development do or do not exist in significant amounts to make them useful in education.

But if changes in bodily size do not appear to be closely correlated with changes in abilities, we may still ask whether they are related to such factors as are generally considered under such headings as personality, adjustment and behavior. Attempts to seek such correlates have been many in number but the results are disappointing.

It is perhaps significant that in a symposium carried on at the Tercentenary Celebration of Harvard University which was devoted to the discussion of factors determining human behavior[20] that no part of that discussion was given over to the study of anthropometric measurement. Perhaps the volume by Paterson[21] had done its work of negating rather naive beliefs too well and too recently, to make this subject one of genuine interest and possible fruitfulness. There seems to be little doubt that mass correlation coefficients of personality descriptions (rated and tested) with measurements of physique are so low that possession of one measurement does not enable us to predict what the other may be. Whether this is due to lack of genuine relationships or due to the desultory attempts at the measurement of personality and inadequate methods of study cannot be determined until there is much improvement in methods and techniques.

But enough individual cases can be uncovered to show that the state of physical development *may* be a potent *indirect* factor in determining behavior tendencies. The very small child, the very tall child, the irregularly developed child *may*[22] find such a condition to be a potent force in deter-

[20] Harvard Tercentenary Publications. *Factors Determining Human Behavior*, Harvard University Press, Cambridge, Mass., 1937.

[21] Paterson, D. G. *Physique and Intellect*, (New York: Century Co., 1930).

[22] We emphasize the *may* here because the writer has had a very good opportunity to watch large groups of adolescents and to interview several hundred of them in the last three years. As far as personality test scores can be depended upon (and, more important, as far as we could determine from prolonged and probing interviews) there are cases of unusual physical development which do not affect persons in any specific way or which have been so well compensated for that they are not potent factors in the adjustment of the child.

mining how he shall receive, and be received by, his associates. Even Allport's[23] recent attempt at an environmentalistic description (as opposed to the nativistic attempts of Kretchmer) does not present a cause and effect situation. He uses the terms "predispose" and "tend" in stating his case but there are enough exceptions to suggest that even these words are too strong. Because two conditions appear together occasionally, there is little reason to believe that they are related in a causal manner. An individual may possess extroverted, realistic, and sociable traits even though he may have a malformed and frail body, and even sometimes *because* he has such a body. Consider, for example, the fact that some homes are built around the defective child at the expense of all the "normal" children in the home, and consider the result when parents build the lives of their children around a physical handicap.

The writer is inclined to assert then that physical irregularities do not tend to create any particular types of personality or adjustment problems. We suggest that such irregularities may be considered only as initial difficulties. Suitable or unsuitable educational procedures (applied to the person or to his associates) will, in all probability, determine the type of response which will be made. Certainly, the belief that certain types of physical irregularities predispose to certain types of social response, either directly or indirectly, goes far beyond any data on the subject and ignores too much the type of education which may be provided.

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[23] Allport, C. W. *Personality: A Psychological Interpretation,* (New York: Henry Holt & Co., 1937). "Within this normal range (i.e. of glandular functioning and body build) physical build is associated only *indirectly* with personality. Strong bodies, well-formed, and socially approved, predispose people (especially in youth) to develop extroverted, realistic, sociable traits; conversely, frail, malformed, or markedly atypical physiques tend (in response to social and environmental standards) to produce introverted, intellectual, or autistic personalities." pp. 78.

A STANDARDIZED MEASURE OF CLASSROOM DEMOCRACY

FREDERICK PISTOR
Hunter College of the City of New York

Editor's ***note:*** One hears much these days about democracy in government and education. The author presents data on the validity and reliability of an instrument for measuring democracy in the class room.

ONE of the current controversial problems in education is the relative value of the so-called progressive or new-type school versus the so-called traditional or old-type school. There have been many debates about the advantages and limitations of the two schools. Artist-teachers and administrators of new-type schools have published attractive accounts of experimental teaching practices and have attempted to show the superior results of such work.

For the most part, these claims and reports are of a non-scientific nature. Especially before 1934 there had been little experimentation in which pupil growth in progressive schools was scientifically analyzed, measured, and compared with pupil growth under traditional practices. In the last few years scientific appraisals of progressive practices have increased. Today there are about forty completed studies and a dozen or more under way.

INADEQUACY OF MEASUREMENT PROGRAMS

Most of these studies are limited in scope; they confine their measurement program to achievement in subject-matter. Few have attempted to appraise the other phases of the corporate living of the pupils in the experiment, such as pupil interests, creative abilities, objectives, attitudes, mental health, participation in social living, relationships with the community, and use of leisure. Usually, only one or two out of a great number of educational objectives are used as the bases for measurement. These are often relatively unimportant; yet upon them comprehensive judgments are often made.

EXAMPLES OF ADEQUATE MEASUREMENT PROGRAMS

Of the completed studies in this area, three have attempted the measurement of many phases of classroom work in both types of schools. These

are the contributions of Collings,[1] Pistor,[2] and Wrightstone.[3] In addition to the use of standardized tests of subject-matter achievement, these investigators employed measurements of many other phases of pupil participation and growth. Diagram 1 gives a comparison of the measurement program of these experimenters.

These three studies illustrate what can be done to include more of the total picture in measurement. An adequate plan of measurement must include the collecting of valid and reliable evidence on most or, if possible, all of the major objectives of the school being appraised.

OTHER LIMITATIONS OF MEASUREMENT PROGRAMS

In addition to inadequate measurement programs, some studies of progressive versus traditional practices have these weaknesses:

1. *Lack of Definite Objectives.* Some studies do not include analyses of the educational objectives of the pupils under measurement, thus making it impossible for the reader to know exactly what was being attempted. Educational objectives must be stated in order to know what to measure.

2. *Lack of Uniformity in the Use of Terms.* Words such as activity program, unit, informal, progressive, and traditional seem to have certain meanings in one school and other meanings elsewhere. For example, the term 'activity program' as used in one large city, refers to nothing more than a conventional subject program to which has been added a little handwork and library work. In another community, 'formal' means arithmetic problems out of a textbook and 'informal' means hare-and-hound problems given and answered orally. Terms should be carefully defined so that a report does not confuse readers.

3. *Omission of Detailed Experimental Factors.* Some experimenters have failed to give details and descriptions of the experimental factors, both variables and controls. Some detail, such as whether a logically-organized course in arithmetic is taught or whether only those arithmetic topics are taught for which the pupils are experiencing current need in carrying out

[1] Collings, E. An Experiment with a Project Curriculum. New York: Macmillan, 1923.

[2] Pistor, F. "A Valid Scientific Appraisal of an Enterprise in Progressive Education," *Journal of Educational Research,* XXIX (Feb., 1935), pp. 433–448.

[3] Wrightstone, J. W. *Appraisal of Newer Elementary School Practices.* New York: Bureau of Publications, Teachers College, Columbia University, 1938.

Phase of Schoolwork Measured	Collings (1923)	Pintor (1934)	Wrightstone (1935)
1. Subject-matter Achievement	Reading, arithmetic, spelling, language, geography, and history achievement tests	Reading, dictation, language usage, geography, history, arithmetic, and hygiene achievement tests.	Reading, spelling, language, arithmetic, Knowledge of Current Affairs Test. Test of Health Awareness.
2. Ability to Find and to Use Library Materials	Incidental statements and subjective judgments	Performance Tests: Using the Dictionary Using Encyclopedias Using Bibliographies Using the Card Index Interpreting Maps Interpreting Pictures	Test of Critical Thinking: Obtaining Facts Explaining Facts Applying Facts
3. Creative Ability		Judgment Rating Scales: Creative Written Work Creative Art Work Creative Thinking (stenographic records)	Ratings of Creative Language Arts Creative Graphic Arts Art Judgment Test
4. Participation in Group Living	Descriptive accounts of a few selected projects	Repeated—Sample Observations and Stenographic Records of 38 Trait-Actions classified under Initiative, Cooperation, Reliability, Work Spirit, Courtesy, and Housekeeping.	Controlled Observation Techniques and Anecdotal Records of Self-Initiated Activities, Cooperative Activities, Critical Activities, Experimental Activities, Leadership Activities, and Work-Spirit Activities. Total 18 Trait-Actions.
5. Personality Adjustment	Measured by records of enrollment, attendance, truancy, graduation, and corporal punishment.	Tests, Questionnaires, and Rating Sheets: Efficiency in Group Maintenance Duties. Knowledge and Evaluation of Group Objectives. Knowledge of Other Pupils.	Personal Adjustment: Woodworth-Mathews Personal Data Sheet. Social Adjustment: Self-Descriptive Scale.
6. Community Relationships	Measured by records of improved methods of farming, number of parents using school to solve farm problems, votes for maximum teacher levy, decrease in disease, etc.	Battery of Twelve Local Environment Tests.	
7. Leisure and Home Activities	Measured by: home leisure reading, projects carried on during vacation; study of music in the home, improvements in the home, etc.	Pupil Questionnaire: "How I Spent the Week." Individual Lists of Library Books Read. Pupil Diaries and Journals Individual Lists of Construction and Experimental Activities Carried on Out-of-School.	Questionnaire on Selected Pupil Extra-School Activities.
8. Physical Ability		Health Office Records Attendance and Illness Records Brace Scale of Motor Ability Tests	Rogers Physical Capacity Test.

Diagram 1: Comparison of Scope of Appraisal Programs of Three Studies of Progressive Versus Traditional Practices.

their chosen objectives and activities, affects results considerably. Some experiments, such as Colling's and Pistor's, involve a 100 per cent activity program, considered by some as too radical and too difficult to administrate in large city schools. A number of other experiments concern modified, half-way steps between progressivism and traditionalism. It is impossible to interpret the results of experiments of so-called progressive education unless the reader knows the exact conditions which confronted the learners.

4. *Dependence upon Paper-and-Pencil Devices.* Many studies make great use of verbal tests, rating sheets, and questionnaires requiring certain reading and writing abilities of the pupils who use them. There is insufficient development and use of performance tests in which pupils use real materials in genuine situations. There is a need for more measurement of actual overt pupil behavior in social situations.

5. *Findings are Not Interrelated.* All studies involving large numbers of pupils and most studies involving smaller numbers of children have not attempted to interrelate the findings with various types of measurement. By determining what light each group of findings throws on other groups of findings, and the continuities and generalized modes of personal response which appear in all, an experimenter can gain much more perspective on the personality of the child as a whole. In one highly publicized study some of the pupils who are measured with one type of instrument are not the same children measured by other instruments, and are not even the same children who were equated. One or two measurements of any child are worthless unless interpreted against a background of many other measurements.

6. *Scarcity of Measurements Which Give Comparable Results.* Instruments for appraising work in one progressive school should be constructed broadly for use in many schools, both progressive and traditional. Likewise tests standardized only in traditional schools should be attempted in progressive schools in order to obtain norms under other than conventional procedures.

AN EXPERIMENT IN MEASUREMENT

At present it is impossible to interpret the findings of studies of progressive versus traditional practices because of the shortcomings reported above. What is needed is a series of instruments standardized in schools of both types which can be used to measure many important experimental

factors, both controls and variables. Such a series of instruments is under construction by the writer. One of these instruments is a Classroom Rating Blank: *Practicing Democracy in the Classroom* which was used in a large number of cooperating classrooms in rural, village, and urban schools in 1938, 1939, and 1940. Controlled sampling was employed in order to secure comparable classrooms engaging in three types of practices, designated for convenience as Democratic, Middle-Ground, and Autocratic. Table I gives the distribution of these classrooms.

TABLE I

DISTRIBUTION OF CLASSROOMS COOPERATING IN STANDARDIZATION BY SECTION OF COUNTRY, GRADE LEVELS, AND CLASSIFICATION

Section of Country	Grades 1–3				Grades 4–8				Grades 9 and Above				Total All Grades
	D*	M	A	Tot.	D	M	A	Tot.	D	M	A	Tot	
New England	20	20	20	60	20	20	20	60	12	12	12	36	156
Middle Atlantic	20	20	20	60	20	20	20	60	12	12	12	36	156
South East	20	20	20	60	20	20	20	60	12	12	12	36	156
Mid West	20	20	20	60	20	20	20	60	12	12	12	36	156
Far West	20	20	20	60	20	20	20	60	12	12	12	36	156
Total Classrooms	100	100	100	300	100	100	100	300	60	60	60	180	780

* D means Democratic Classrooms; M—Middle-Ground; A—Autocratic.

PURPOSE AND SCOPE OF THE CLASSROOM RATING BLANK

The major purpose of the Blank is to provide an objective and reliable measure of classroom efficiency in preparing pupils to participate in a democratic society. For this purpose 120 classroom practices which have proved most valid and reliable have been selected for measurement. For convenience these are classified under twelve section headings:

1. Curriculum Opportunities
2. Selecting and Planning Classwork
3. Personal Relationships of Pupils
4. Relationships with Community
5. Discussion and Class Conference Periods
6. Silent Reading and Directed Study Periods
7. Construction and Experimentation Periods
8. Appreciation and Creative Work Periods
9. Drill and Practice Periods
10. Recreation and Game Periods
11. Routine Affairs and Maintenance Work
12. Organization of Classroom Materials

EXAMPLES OF ITEMS AND METHODS OF RATING

It is necessary to follow the detailed directions for rating each item as given in the manual because the norms were obtained under exact and limited methods of interpreting the items. The rating is done on a five-point scale, but many of the items are weighted. Illustrations of a few of the items and how they are to be rated follow:

Item 1c: *Does the class program of living consist of a wide variety of experiences to challenge and to interest pupils of various levels and types of intelligence?*

Rate this *20* if the weekly program provides at least one hour for each of the following: field trip, construction work, science experiment or science demonstration work, committee work, creative arts experience, creative music work, class discussion period, social science problem-solving period, individual work period, and work in cleaning, maintaining, decorating, or otherwise improving the classroom.

Rate this *16* if the weekly program provides at least one hour for each of any 8 or 9 of the above types of experiences.

Rate this *12* if it provides at least one hour for each of any 6 or 7 of the above types of experiences.

Rate this *8* if it provides at least one hour for each of any 3, 4, or 5 of the above types of experiences.

Rate this *4* if it provides for less than 3 of these experiences, one hour each.

Item 1i: *Is the situation such that the pupils demand and develop greater proficiency in the use of the skills as they need them?*

Rate this *10* if 70 per cent or more of the skills in arithmetic, spelling, language, and reading originate in some current class activity in which the children see the need for such skills. To earn this rating, such skills must be isolated temporarily from the situation in which they were met, for study and drill through repetition, and they must be used in later class activities.

Rate this *8* if 50 to 69 per cent of the skills originate this way and are treated in this manner.

Rate this *6* if 30 to 49 per cent of the skills originate this way and are treated in this manner.

Rate this *4* if 10 to 29 per cent of the skills originate this way and are treated in this manner.

Rate this *2* if less than 10 per cent of the skills originate this way and are treated in this manner.

VALIDATION OF THE BLANK

Validation of Content. The items used in the Rating Blank are based on previous research of the author and others in evaluation of experimental school practices.*

Validation by Statistical Treatment. The items were also validated by correlating the results with subjective judgments of cooperating school officials who selected the classrooms for experimentation. Before the contents of the Rating Blank were made known to these officers, they were asked to select one classroom which fit each of these descriptions:

Classroom A

In this room the children are getting abundant knowledge of and practice in democratic living. There is very much opportunity for the pupils to choose, to initiate, to plan, to evaluate, to experiment, to cooperate, and to think critically. The children have much freedom to communicate with each other. They interact considerably with the local community, not only by studying it but also by helping to improve it. Equal educational opportunity is given to pupils of lower intelligence by individualization of the drill work, by working with many materials, and by encouraging many social enterprises. This room, in your judgment, is considerably ahead of the average classroom in providing pupil practice in democratic procedures.

Classroom B

This classroom is comparable to Classroom A in many ways. It achieves about as much in the learning of facts and knowledge. It has about equally as good a teacher as Classroom A. The size of the class is about the same. The type of children and their home background are about the same. The big difference is in the pupil opportunities to learn about and to practice living in a democratic group. In this respect Classroom B is not quite as good as Classroom A. Classroom B may engage in some democratic practices and in some autocrat practices, or it may be rather democratic part

* Collings, Pistor, Wrightstone, Op. Cit.

of the time, and autocratic the rest of the time. This classroom should be one that can be taught of as a Middle-Ground Classroom, representing a half-way step between Classroom A and Classroom C.

Classroom C

This classroom should be comparable to Classrooms A and B in many ways. The children should be acquiring about as much subject-matter. The teacher should have about the same amount of training and experience and be about as good as the teachers in Classrooms A and B. The size of the class should be about the same. The kind of pupils and their home background should be about the same. The important difference between Classroom C and Classrooms A and B is that it offers a minimum of opportunities for pupils to practice democracy. They have very little or no practice in initiating, selecting, exploring, investigating, experimenting, creating, planning, cooperating, judging, enjoying, or playing. Emphasis is on acceptance, conformity, passivity, quiet, and restraint. Most of the work is selected, planned, and judged by the teacher or the school. The work of Classroom C may well be described as Autocratic. Classroom C should be less democratic than Classroom B, which in turn should be less democratic than Classroom A. Classrooms A and C may be thought of as representing extremes and Classroom B representing middle ground in respect to pupil opportunities for practice in democratic living.

The teachers of the chosen classrooms were not informed of the selections or ratings because of the nature of the classification of the rooms, and because no changes were wanted from regular everyday teaching procedures during the period of evaluation.

In situations where it was impossible to find these three types of classrooms in a single building or system, comparable classrooms, satisfying sampling and other requirements of the investigation, were selected in nearby communities.

The selected classrooms were rated by trained workers in education who made the necessary observations and who consulted the classroom teachers when necessary. The results of the ratings were correlated with the judgments of the school officers who selected the classrooms. The Mean Square Contingency C's, computed by the Pearson Contingency Method, range from .77 to 1.00.

RELIABILITY OF THE BLANK

The reliability of this instrument was determined by obtaining reliability coefficients by the odd-even technique and corrected by the Spearman–Brown formula. The obtained coefficients range from .65 to .98. They indicate that the Classroom Rating Blank, when used conscientiously in accordance with the detailed directions given in the manual, gives an accurate and dependable score.

NORMS

Norms have been obtained for five sections of the country and for the nation as a whole. These norms are for three school levels,—Grades 1–3; Grades 4–8; and Grades 9 and Above. The norms are of three types,—those for each of the 120 teaching practices, those for each of the 12 sections of the Rating Blank, and the total score. Since these norms fill approximately twenty manuscript pages only the total score norms are given here. Table II gives these norms.

TABLE II

MEAN AVERAGE DEMOCRATIC PROCEDURE INDEXES OBTAINED IN COOPERATING CLASSROOMS

Section of Country	Designated Classification	Grades 1–3	Grades 4–8	Grades 9 & Above
New England	Democratic Classrooms	840. 7	844. 3	825. 6
	Middle Ground Classrooms	602. 8	643. 1	606. 9
	Autocratic Classrooms	365. 5	359. 8	380. 4
Middle Atlantic	Democratic Classrooms	863. 7	905. 6	873. 1
	Middle Ground Classrooms	638. 3	663. 6	632. 9
	Autocratic Classrooms	394. 5	407. 5	401. 5
South East	Democratic Classrooms	888. 5	911. 3	887. 0
	Middle Ground Classrooms	662. 6	691. 2	656. 2
	Autocratic Classrooms	408. 4	440. 3	424. 0
Mid West	Democratic Classrooms	935. 7	975. 7	921. 2
	Middle Ground Classrooms	690. 7	706. 4	687. 2
	Autocratic Classrooms	440. 1	442. 8	447. 4
Far West	Democratic Classrooms	990. 0	1007. 6	956. 5
	Middle Ground Classrooms	721. 9	746. 2	709. 0
	Autocratic Classrooms	471. 0	479. 6	478. 4
Nation as a Whole	Democratic Classrooms	902. 1	932. 7	908. 2
	Middle Ground Classrooms	656. 5	698. 2	660. 3
	Autocratic Classrooms	414. 5	429. 0	430. 4

USES OF THE CLASSROOM RATING BLANK

The uses of the Classroom Rating Blank are many and varied, but a major and immediate purpose is to provide an objective and reliable measure of classroom efficiency in preparing pupils to participate in a democratic society. The Item, the Section, and the Total Score Norms are much more valid and reliable measures of classroom work than mere subjective judgments. They are measures of the type of social living going on in a given classroom and are equally as important, as results obtained with standardized tests of subject matter achievement. Rating Blank results can be used in the same way as class scores made on standardized tests. They can be compared with National or Sectional Norms to determine whether a given classroom is high, low, or average. Furthermore the Blank is sufficiently analytical to indicate the specific strengths and weaknesses in the social living of a group of pupils. Since norms are given for each of 120 teaching practices, a teacher can easily determine which types of democratic experiences her children need. The Blank is especially valuable in experiments and studies involving teaching practices. It is one of a series of measuring instruments in preparation which should make it less difficult to interpret the controls, the variables, and the results of such experiments.

INFERRING LEVEL OF MENTAL ACTIVITY FROM PUPILS' CLASSROOM QUESTIONS[1]

GEORGE L. FAHEY
University of Pittsburgh
and
STEPHEN M. COREY
University of Chicago

Editor's note: Pupil evaluation has always been closely associated with the oral activities of the class period. The authors find that teachers may infer the intelligence of their pupils from the pupils' questions with a fair degree of accuracy.

THE PROBLEM

THE authors have reported elsewhere[2] the results of an attempt to infer level of mental activity from the oral questions asked by pupils in high-school classrooms. The present paper summarizes a similar more recent study involving a larger number of questions and more adequate controls. It is well known that teachers continuously judge pupils in terms of the implied thoughtfulness of their classroom oral questions. Some pupils are described as asking questions which are "intelligent" while others more or less consistently ask questions which are "stupid" or "pointless". The specific purpose of the present study was to discover: (a) whether or not classroom questions, *per se*, constitute valid evidence of the complexity or level of the mental activity being engaged in by the pupils asking them; (b) the degree to which experienced teachers tend to agree in their estimates of the level of mental activity implied by pupils' oral classroom questions, and, if differences in these levels are discernible; (c) to what extent pupils differ as individuals in the level of mental activity implied by their questions; and (d) what relationships exist between these levels and intelligence, age, interests, certain reading abilities, and accuracy and consistency in thinking.

THE PROCEDURE

All the questions asked by 169 pupils in six high-school classes were recorded by trained observers during a period of one academic year. The

[1] This study was supported in part by a grant from the Research Committee of the Graduate School of the University of Wisconsin.

[2] Corey, Stephen M. and Fahey, George L. "Inferring Type of Pupil Mental Activity from Classroom Questions Asked". *Journal of Educational Psychology*, XXXI (1940), pp. 94–102.

observers attended each class daily and made verbatim records in longhand. The name of the questioner as well as the question was recorded. This method of securing the data was found to be satisfactory when the records so made were compared with those of an expert stenographer who made parallel records in shorthand for a seven day period. The distribution of pupils, classes, and amount of questioning activity in each class is shown in Table I.

TABLE I

DISTRIBUTION OF PUPILS, CLASSES AND AMOUNT OF QUESTIONING ACTIVITY IN EACH CLASS FOR THE YEAR

Class	Grade Level	Number of boys	Number of girls	Total pupils	Mean number of questions per pupil
Science	7	18	15	33	34. 93
History	8	16	18	34	10. 73
Science	9	10	13	23	20. 76
English	10	20	18	38	20. 13
English	11	16	4	20	19. 25
History	11	8	13	21	35. 10
Total group		88	81	169	22. 12

Other test and personal data were obtained from the high-school records through the courtesy of the principal.

For the purpose of the present study each of the 3740 questions was recorded on a card together with the pupil's name, class, the date on which the question was asked, and a number indicating the position of the question in the total continuity of oral questions asked in the class. Six judges were employed on an hourly-wage basis to make estimates with respect to the mental complexity, or level of mental activity, implied by each question. The judges had been high-school teachers and their experience ranged from two to ten years. Two of them were teachers of science; one had taught social science; one English; and the other two, combinations of social science and English. The nature of the problem was explained to each judge in individual conference, and each received (a) a brief instruction sheet containing an outlining of the investigation, (b) suggestions for recording judgments so as to produce uniform results, and (c) the following specific directions:

"The method of the experiment shall be to sort the individual cards into groups so that each group contains questions implying approximately

the same level of pupil thinking and so that the groups are progressively arranged from that representing the least mental complexity to that representing the greatest. A record shall be made of the group to which each question is assigned on the record sheets provided. Marks should not be made on the cards.

"In evaluating the questions the following factors should be considered:

1. Judgment should be made on the basis of the question itself and the level of thinking which it implies. . . .

2. Judgments must be made relative to the group of pupils by one of whom the question was asked. There are no arbitrarily assignable limits. . . .

3. Questions are to be thought of as 'oral expressions of problems which the questioner faces in his thinking because of a lack of information or a conflict between present and previous experience'. The function of a question is, then, to find a means to surmount the obstacle, resolve the difficulty, or fill the gap in thinking.

4. 'Levels of thinking', 'mental complexity', which are here used synonymously, are difficult to define in any exact terms. There appear to be, however, these essential features of mental activity which are of value in the discrimination of various levels:

a. The degree of complexity varies according to the size of the mental pattern which the questioner is holding in mind at the time of questioning,—that is, the number of facts, ideas, hypotheses which he must constantly be aware of and which are all involved in the stream of thought which is implied by the question. . . .

b. The interrelationships perceived between these separate entities and the difficulty of perceiving and maintaining these relationships are also essential to a high degree of mental complexity. . . .

c. The clarity of the problematic situation in the mind of the questioner is a third factor in determining level of mental complexity. Although this factor is easily confused with conciseness, form, grammar, etc., which probably are not satisfactory indices of mental complexity, it must be considered since a high level of thought cannot be implied by a question which does not make the problem clear to the hearer and, hence, will not evoke a satisfactory answer.

5. The following system of ranking should be used:

1—questions implying a very low level of mental complexity or activity.

2—questions implying a rather low level of mental complexity or activity.

3—questions implying an average level of mental complexity or activity.
4—questions implying a high level of mental complexity or activity.
5—questions implying a very high level of mental complexity or activity.'

In the investigation reported earlier, and already referred to above, in which 200 questions were rated by thirteen judges, certain questions were rather consistently agreed upon. Some of these questions were attached to the instruction sheets for illustrative purposes.

The procedure of judging was simple. The cards were presented to the judges grouped by classes and in chronological order of occurrence. The judges then sorted these cards in terms of the five levels of mental complexity. Since the questions were numbered, each judge could enter the value assigned to a question on a record blank opposite its number. Hence no marks were made upon the cards to influence other judges. The ratings assigned were later assembled on one sheet.

The judges worked independently but each conferred several times with the junior author to assure the correctness of their procedure. The time required to classify the 3740 questions ranged from sixteen to thirty hours, but only one judge was able to finish in less than twenty-seven hours.

The ratings thus assigned were averaged to yield a composite value for each question. The correlation between this method of getting a composite and the more involved method suggested by Hull[8] was + .95 for a sample of 420 questions.

THE RESULTS

The extent to which classroom questions, *per se*, constitute evidence of level of mental activity or complexity depends upon the ability of competent judges to agree in their estimates of the implications of the questions. This agreement can be shown by the intercorrelations of the ranks assigned various questions by the judges. When the ratings assigned the questions by one judge were correlated with those assigned by each of the other five judges the coefficients ranged from + .28 to + .92, with a median of + .54. The middle sixty-eight per cent of the coefficients fell between + .42 and + .60. All the intercorrelations were positive and all

[8] Hull, Clark L. *Aptitude Testing.* (Yonkers-on-Hudson, New York: World Book Company, 1928, pp. 382–401.

were statistically significant. While the relationships were not great enough to permit accurate prediction of one judge's ratings from those of another, they demonstrate a marked tendency to agree.

There is no definite assurance that these persistent, positive, and statistically significant correlation coefficients were a function solely of the factor of mental complexity. Other factors may have been involved, despite the fact that the judges were uniformly instructed, that all had a teacher's point of view, and that all seemed to understand clearly what they were attempting to do. In the earlier study referred to above a correlation of + .50 was found between the length of the question in words and the number of times the question was checked as implying mental complexity. In the present study, for a random sample of 100 questions, the correlation between length and mental complexity level was + .64. It would seem reasonable to expect some such relationship since, while long questions need not necessarily imply mental complexity, it would be difficult to get any significant evidence of mental level from one or two word questions.

The problem of distinguishing differences among individuals with respect to estimates of mental complexity implied by their questions was complicated by the fact that one-half of the individuals in the total group asked less than 10.8 oral questions each, while one-fourth of them asked less than four during the course of the year. Despite this dearth of data on some pupils, the mean mental complexity in terms of the composite of judgments on each question was computed for each pupil. This distribution is shown in Table II.

TABLE II

DISTRIBUTION OF PUPILS ACCORDING TO MEAN LEVEL OF MENTAL COMPLEXITY IMPLIED BY THEIR QUESTIONS

Mean mental complexity level	Number of pupils	
3.25—3.49	1	
3.00—3.24	0	
2.75—2.99	1	
2.50—2.74	4	
2.25—2.49	16	Mean = 1.89
2.00—2.24	33	S. D. = .34
1.75—1.99	48	
1.50—1.74	40	
1.25—1.49	19	
1.00—1.24	0	
	162	
Pupils asking no oral questions	7	
	169	

Note: The differences are real, but not marked. The mean level of mental complexity index for two-thirds of the pupils fell within a range of less than one category in the classification system used.

The other factors with which the level of mental complexity implied by the questions was compared were: intelligence, chronological age, school achievement as measured by grades, "likes" and "dislikes" in the subject in which observations were made, and mean "likes" and mean "dislikes", as measured by *Test 8.2: Interest Questionnaire**,[4] reading comprehension and speed as measured by the *Iowa Silent Reading Test,* reading appreciation as measured by *Test 3.3: Questionnaire on Voluntary Reading**, consistency, confusion, and accuracy in thinking in social problems as measured by *Test 1.4: Social Problems**, consistency in attitudes as measured by *Test 4.2 and 4.3: Scale of Beliefs**, inconsistency and accuracy in thinking as measured by *Test 1.3: Application of Principles in Science**, and, general accuracy, accuracy with insufficient data, accuracy with items which are true or false, accuracy with items which are probably true or probably false, tendency to be overcautious in ascribing truth or falsity, and tendency to go beyond the data in the direction of ascribing greater truth or falsity than is warranted, as measured by *Test 2.5: Interpretation of Data**. The correlations between these measures and mean level of mental complexity are summarized in Table III. Both product-moment coefficients and correlation ratios are given.

The most impressive generalization warranted by the data given in Table III is that estimated level of mental complexity was slightly, if at all, related to the various other variables. None of the product-moment coefficients could be safely attributed to factors of relationship other than chance. A few correlation ratios attained statistical significance but they were too small to justify broad generalizations. One might reasonably expect some relationship between the mental complexity of a pupil's questions and his intelligence or his accuracy and consistency in thinking, but such was not the case.

SUMMARY AND CONCLUSIONS

All the questions asked by 169 pupils in six high-school classes were recorded for a period of one academic year. A group of six experienced teachers, working individually, made inferences as to the level of pupil

[4] Items marked with an asterisk are tests taken from the test battery administered by the Progressive Education Association in the Eight-Year Evaluation Study of Co-operating High Schools and Colleges. The high school in which the questions were recorded is one of these co-operating schools. The test records were made available through the courtesy of the high-school principal.

TABLE III

CORRELATION BETWEEN MEAN LEVEL OF MENTAL COMPLEXITY AND VARIOUS FACTORS IN TERMS OF PRODUCT-MOMENT COEFFICIENTS AND CORRELATION RATIOS

Variables	r ± S. E.	eta_{xy} ± S. E.	eta_{yx} ± S. E.
Intelligence quotient	.14 ± .08	.29 ± .07*	.23 ± .08
Chronological age	—.08 ± .08	.15 ± .08	.28 ± .07*
Grade in course	.18 ± .08	.39 ± .06*	.34 ± .07*
Scholastic average	.13 ± .08	.40 ± .07*	.34 ± .07*
"Likes" in subject	.10 ± .08	.26 ± .07*	.25 ± .08*
"Dislikes" in subject	—.05 ± .08	.24 ± .08*	.50 ± .06*
Mean "likes"	.05 ± .08	.25 ± .08*	.27 ± .07*
Mean "dislikes"	—.11 ± .08	.35 ± .07*	.13 ± .08
Reading comprehensions#	.07 ± .12	.18 ± .11	.25 ± .11
Reading speed#	.01 ± .12	.24 ± .11	.24 ± .11
Reading appreciation	—.04 ± .09	.28 ± .08*	.18 ± .09
Social problems consistency	—.07 ± .08	.21 ± .08	.33 ± .07*
"Beliefs" consistency	.13 ± .08	.14 ± .08	.21 ± .08
Inconsistency in application of principles#	.04 ± .10	.30 ± .09*	.15 ± .10
Confusion in social problems	—.08 ± .08	.17 ± .08	.17 ± .08
Accuracy with social problems	.01 ± .09	.13 ± .08	.14 ± .08
Accuracy in application of principles#	—.06 ± .10	.31 ± .09*	.37 ± .09*
General accuracy in interpretation of data#	.09 ± .10	.32 ± .09*	.31 ± .09*
Accuracy with insufficient data	.15 ± .10	.36 ± .09*	.30 ± .09*
Accuracy with true-false#	.07 ± .10	.26 ± .10	.34 ± .09*
Accuracy with probably true-probably false#	.10 ± .10	.19 ± .10	.17 ± .10
Tendency to be over-cautious#	.18 ± .10	.22 ± .10	.38 ± .09*
Tendency to go beyond the data#	.04 ± .10	.32 ± .09*	.27 ± .09*

* Statistically significant in that the correlation is three times S. E.
\# Tests administered only in grades nine through twelve (N = 96).

mental activity implied by each question, and accordingly rated the questions on a five-point scale. Intercorrelations were made of the rankings of each question by each judge and the rankings of all other judges. The judgments of each question were combined and the mean level of mental complexity for all the questions asked by each individual pupil was computed. These means were correlated with other variables such as intelligence, age, school achievement, reading ability and appreciation, interests, and accuracy and consistency in thinking. The following conclusions seem warranted:

1. Pupils' classroom questions, considered by themselves and removed from their original context, appear to imply similar degrees of mental complexity to experienced teachers. The median coefficient of correlation measuring this relationship between estimates was + .54.

2. The fact that the correlation between the number of words in a question and its estimated "level of mental complexity" index (+ .64) is

about the same as the coefficient of reliability of the complexity estimate (+ .54), implies that the latter judgment may be a function primarily of question length.

3. Individual differences in mean level of mental complexity as inferred from oral questioning can be distinguished and are symmetrically distributed.

4. Such individual differences in mean level of mental complexity implied by oral questions were but slightly, if at all, related to differences in intelligence, age, scholastic achievement, interests, reading abilities and appreciation, and accuracy and consistency in thinking.

5. These data substantiate the same absence of relationship between level of mental complexity as inferred from oral questions and other variables which the authors reported in a previous study involving somewhat different methods.

THE CONTRIBUTION OF AN ANALYSIS OF OLD SCHOOL TEXTBOOKS TO THE HISTORY OF EDUCATION IN UNITED STATES

JOHN A. NIETZ
University of Pittsburgh

Editor's note: The thesis of this paper is that to know the textbooks of any period is to know what was taught. The author opens up a profitable field for further research.

INTRODUCTION

WHAT is the value or meaning of analyzing old school textbooks?

The thesis upon which this paper is based is that if we know what textbooks were used in any particular area during any period, then by an analysis of those books we can determine rather definitely what was taught in that place and at that time. Most authorities agree that in the past in the United States the textbooks in use in any particular school largely constituted the course of study of that school.

Most of the textbooks in the history of education are devoted most largely, and rightly so, to the ideas of the leading educational theorists of particular countries and periods. Consequently, little attention is given to the actual educational practices of those countries and periods. In other words, such books are more fully histories of educational thought. Those who study these books, as a result, do not become aware of the lag that usually exists between the theory of education, as advocated by one or few educational theorists, and that of actual practice. Should we not learn regarding both?

But upon what specific practices will an analysis of old textbooks shed light? In this brief paper there will be time to deal only with the following: the purposes for teaching particular subjects, the evolution of the school offering, the nature of the content taught, and characteristics concerning the methods of teaching as reflected in the nature of old textbooks.

OBJECTIVES IN TEACHING PARTICULAR SUBJECTS

An analysis of the textbooks of the past reveals the objectives to be attained in the different subjects in two ways. First, specific statements by the authors regarding objectives were usually set forth in the prefaces of the books. Nearly without exception, old American textbooks contained

prefaces. Later editions of popular books even commonly contained a reprinting of all the prefaces of the earlier editions. Nearly always these prefaces dealt, in part at least, with the objectives to be fulfilled by the use of the book. The following quotations from several old American history textbook prefaces reveal the nature of such statements of objectives:

Goodrich in 1828 stated:

> What advantages, then, do we propose to ourselves, in perusing the History of the United States? In general, it may be said, that the proper end of all reading is to make good men and good citizens.[1]

Emma Willard in 1846 wrote:

> We have, indeed, been desirous to cultivate the memory, the intellect, and the taste. But much more anxious have we been to sow the seeds of virtue, by showing the good in such amiable lights, that the youthful heart shall kindle into desires of imitation. And we have been careful to give clear conceptions of those deeds, which are proper to imitate; while with regard to bad actions, we have, as far as possible, given the results, rather than the detail.[2]

An analysis by C. D. Jacobs[3] of the prefaces of fifty-three American history textbooks published before 1885 revealed the following to have been the most frequently mentioned general objectives for the teaching of history:

1. To give a clear conception of those deeds which may properly be imitated.
2. To sow the seeds of virtue.
3. To develop thinking on part of pupils.
4. To develop good citizens.
5. To show the results of bad behavior or action.
6. To show relationship between causes and results.

Secondly, objectives are revealed through an analysis of the actual content found in the old textbooks. The findings from such an analysis may not necessarily agree fully with the objectives mentioned in the prefaces. For example, Jacobs found that 44.7 per cent of printed subject-matter of the above mentioned history textbooks was devoted to war, and over 19 per

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[1] Goodrich, Rev. C. A. *A History of the United States of America* (Lexington, Ky.: W. W. Warsley, 1826), Preface.

[2] Willard, Emma. *Abridged History of the United States.* (New York: A. S. Barnes & Co., 1846), Preface.

[3] Jacobs, Chauncey D. *A Study of the Development of School Textbooks in United States History from 1795 to 1885.* Unpublished Doctor's Dissertation, (University of Pittsburgh, 1939).

cent to governmental and political matters. Thus two-thirds of the content was definitely concerned with matters of war and politics. We would question today whether the undue emphasis upon war and politics in the content really resulted in fulfilling the above mentioned objectives as found in the prefaces, at least as we now interpret them.

Analyses of textbooks in other fields would similarly reveal either definite statements of objectives in the prefaces or reflect them in the nature of the subject-matter found in the books.

EVOLUTION OF THE SCHOOL OFFERING

A study of the appearance and development of textbooks in the different subject fields will reveal rather definitely the evolution of the school offering in American education. Evidence seems to point to the fact that after the appearance of a textbook in a particular field, such book would soon be used for study in at least some schools. Then if its use seemed profitable other schools would also introduce it. The popularity of the first book would next result in the appearance of other books in the same field by other authors.

Such evolution certainly took place in the development of geography as a popular school subject in the early American curriculum. As soon as Morse's *American Universal Geography* published in 1784 gained rather common acceptance geographies by many authors appeared from the presses to compete for adoption.

Spelling developed as a separate school subject after the appearance of Webster's *The First Part of a Grammatical Institute of the English Language,* which became known as the "Old Blue Back;" even though the earlier editions usually served the double purpose of primer and speller. Other spellers soon entered the market in competition.

In a general way, the development of the school offering of the past can be determined somewhat from the ease with which old textbooks of a particular period can be uncovered today. The more commonly books of a particular subject were used in any period, the more likely copies of these books have survived to the present. For example, in the writer's private collection of over 4000 textbooks over fifty years old, 502 were published before 1830. Of the 502, the number of different books in each field follows:

67 Latin books	14 Geometries
62 English Readers	12 Composition and Rhetorics
46 Arithmetics	11 Natural philosophies
35 Geographies	10 Political Economy and Sciences
34 English Grammars	8 Astronomies
26 Greek Books	8 Chemistries
21 Spellers	6 Bookkeepings
17 American histories	6 German books
16 World histories	5 Natural histories
15 French books	4 Algebras

Of course, this collection contains only a fraction of the books published before 1830 in America; yet the relative numbers in the different subject fields mentioned above likely reflect somewhat accurately the comparative development of the different subject fields in our early history.

Light is also thrown upon the evolution of school subjects from the analysis of particular books. For example, the *New England Primer* contained lessons in spelling, and Webster's earlier Spellers contained reading lessons. Both fields had not yet gained recognition as separate subjects. Too, the early geographies were what we today call "integrated" or "correlated" social studies. They contained matters of geography, history, economics, and political science. Then when separate textbooks in American history appeared, the title pages would usually acknowledge that they were based on geography. Thus geography may be considered the mother of history as a subject.

NATURE OF SUBJECT-MATTER IN OLD TEXTBOOKS

If it is true, as stated in the beginning, that the pupils in any particular place and period studied what was in the textbooks used, then if we desire to know what actually was taught we must determine the nature of the content of those books. Time permits a treatment only of several fields as illustrative of this sort of analysis.

In 1930, R. R. Robinson[4] completed a general content analysis of 1422 readers published before 1926. He classified the content of these readers into twenty-two categories. Then he calculated the percentage distribution of the content for each of the categories for five periods of our history. In the readers before 1775 about 85 per cent of the content was religious.

[4] Robinson, R. R., *Two Centuries of Change in the Content of School Readers*. (Nashville, Tenn.: George Peabody College for Teachers, 1930).

From 1775 to 1825 22 per cent was religious, but between 1875 and 1926 it decreased to 1.5 per cent. The percentage distribution for content relating to morals and conduct was as follows during the different periods: Before 1775, 8 per cent; 1775–1825, 28 per cent; 1825–75, 23 per cent; 1875–1915, 7 per cent, and 1915–1926, 4.5 per cent. Thus before 1775, 93 per cent dealt with morals and religion while between 1915 and 1926 only 6 per cent. On the other hand, during the first period no content space was devoted either to animals and birds or to boys and girls; while during the last period 20 per cent related to animals and birds and 11.5 per cent to boys and girls. These data reveal not only the nature of content of the readers of the past, but also the purposes of education stressed during the different periods.

An analysis of the content of old geography textbooks reveals equally interesting facts. John Sahli, who has been making a study of the geographies published before 1840, found that the vocabulary difficulty of the ten most commonly used books of that period was placed at the eleventh grade level, as determined by the Yoakam technique. The vocabulary of the first edition by Morse (1784) was at twelfth grade difficulty level.

It was also found that many of these old geographies contained horror stories. For example, *Peter Parley's Geography* of 1829 contained the thrilling narration "of the rocks and stone crushing the inhabitants of the Notch in the White Mountains."[5] The same book portrayed a monster "as large as the mast of a ship, and has frequently been seen, along the shores of New England. Here is a picture of him."[6]

Too, the content of these geography books which most likely would result in the formation of attitudes very commonly was of a type to create bias and prejudices. The geographies written by New England authors contained very critical remarks regarding all non-Protestant religions. For example, Davies (1805) said that in Ireland the priests ruled with "blind superstition and ignorance."[7] Asiatic religions were also severely criticized.

The spirit of narrow nationalism was more or less dominant in the content. It was evidenced both by extolling all things American as well as by being critical about the races and peoples of other lands. A few brief quotations will illustrate the nature of such treatment. In writing about the Mexicans (1795), Morse said:

[5] Goodrich, S. G., *Peter Parley's Geography.* (1st edition) Hartford, 1829, p. 15.
[6] *Ibid.*, p. 14.
[7] Davies, Benjamin, *System of Modern Geography,* 1805, p. 72.

From idleness and constitution, their whole business is amour and intrigue; their ladies of consequence are not distinguished for their chastity or domestic virtues.[8]

Other geographies contained characterizations of other people, as follows: Davies (1805) said the Prussians were "dull and gloomy;" while Dwight (1806) described them as "fond of show and parade in their dress." Mitchell (1840) viewed the Dutch as honest and frugal, but "great smokers." O'Neill (1816) characterized the Danes as "idle, dirty, and dispirited." Dwight (1806) held the Hungarians to be rude, revengeful, and warlike. Morse (1785) said that the Russian "husbands were unkind and cruel to a proverb." Adams (1818) described the Poles as "rash and unsteady." Dwight (1806) characterized the Portuguese as "treacherous and unfaithful." Olney (1830) held the Italians to be "effeminate, superstitious, slavish, and revengeful." Goodrich (1839) viewed the Turks as "grave, indolent, and addicted to jealousy, which leads them to acts of violence and cruelty."

These few characterizations reveal the technique used by the authors of old geographies to teach narrow nationalism. No doubt, the textbooks of other countries did the same. Little wonder we have wars.

METHODS OF TEACHING

The first book on methods with more than local circulation written in the United States was Hall's *Lectures on School Keeping* published in 1829. The first state normal school did not open until 1839 in Lexington, Massachusetts. So the early ideas on methods had to be obtained from other than professional courses and books.

Old textbooks themselves must have constituted an important source for suggestions on methods. Many authors of textbooks took great care in presenting definite plans for the successful teaching of their books. In 1818, Cummings devoted fourteen and one-half pages of the preface of his geography "to assist teachers, who have had but imperfect, or no geographical instruction and who may wish to adopt a method, which has been attached with great success."[9] Woodbridge's book of 1833 enumerated ten specific suggestions for teaching geography. Merely to illustrate, the first one read as follows:

[8] Morse, Jedidiah, *American Universal Geography*, 1795, p. 480.
[9] Cummings, J. A. *Introduction to Geography*. Cambridge, 1818.

1. Let the student observe the country around him, become familiar with the points of the compass; and application of common terms.[10]

This practice of presenting suggestions for teaching was also followed in the prefaces of the textbooks of other subject fields as well as in geography.

A second way in which methods were influenced by the textbooks themselves was through the organization of the book. Due to the strong influence of religion on the early schools, many authors arranged their books, either in whole or part, on a Q–A or catechetical plan. Naturally such a plan implied a memoriter method of teaching. The writer's collection contains books of geography, history, Latin, English grammar, various science books, and even arithmetics arranged on this plan.

Other schemes of arrangement, too, evidently influenced the methods followed. Some presented the material deductively, others inductively. Jacobs found the following plans of organization in American history textbooks before 1885: by epochs, periods of time, parts, sections, divisions, chapters, lessons, pure chronology, and paragraphs.[11]

A third way in which textbooks influenced methods was through the inclusion of teaching and study aids of various sorts. It was found that the following were used in old history textbooks: table of contents, questions at end of sections or chapters, notes, summaries, chronological tables, maps, charts, illustrations, references, glossaries, appendices, and indexes. Analyses of textbooks in other fields will reveal similar types of teaching aids.

The writer, however, does not mean to imply that all the teachers using a particular book would definitely follow all the suggestions of the author, and so all would teach alike. Nevertheless, the suggestions in the prefaces, the nature of the arrangement of the materials in the books, and the inclusion of various sorts of teaching aids must have influenced considerably the methods followed by early teachers in America.

SUMMARY

In conclusion, an analysis of old textbooks throws much light on what was taught in the past. More specifically, from such analysis there can be determined more or less clearly the objectives of teaching the different subjects, a view of the evolution of the school offering, the nature of the content taught in the different subject fields, and ideas of the methods of teaching followed.

[10] Woodbridge, William C.
[11] Jacobs, C. L. op. cit. p. 275.

A STUDY OF THE DIFFICULTY OF DOLCH BASIC SIGHT VOCABULARY IN THE SECOND AND THIRD GRADES OF THE RURAL SCHOOLS IN TWENTY-TWO COUNTIES OF THE STATE OF WISCONSIN*

LOIS G. NEMEC and BLANCHE LOSINSKI
Madison, Wisconsin

Editor's note: Much has been written upon the subject of vocabulary difficulty but the authors present new data relative to a large sample of rural school pupils.

IF A CHILD has difficulty with word recognition in his reading, he also has trouble in comprehension. In such a case the child is apt to become discouraged and uninterested in the reading process. Would a greater knowledge of basic sight vocabulary needs be beneficial in the teaching of primary reading? What words are "basic sight words"? At what grade level should they be mastered? How many of these words are being mastered by the "average" second and third grade children in rural schools? The study herein reported was undertaken to answer these questions.

*NAMES OF THIRTY-FOUR SUPERVISING TEACHERS PARTICIPATING IN TESTING PROJECT OF THIS STUDY AND WORKING IN TWENTY-TWO WISCONSIN COUNTIES

Name of County	*Name of Supervising Teacher*
Adams	Katherine McGowan
Ashland	E. B. Corrigan
Columbia	Orin E. Enerson, Elva Smith
Dane I	Mary Meyer, John Wrage
Dane II	Blanche Losinski, Edythe Sanderman
Green	Esther Hallingstad, Mrs. Margaret P. Huddleston
Green Lake	Esther Toll
Iron	Alice J. Jackson
Juneau	Beatrice Burgdorff, Bert P. Vogel
Langlade	Sophie Hovey
Lincoln	Tillie Sylfest
Marathon	Don L. Beran, Irene M. Kronenwetter
Marquette	C. R. Bartz
Oneida	Mrs. Kathryn J. Wight
Portage	Rowena Allen, Mary Ann Treder
Price	Elizabeth Dunn
Rock	Hattie Fredrick, Mrs. Virginia R. Inman
Sauk	Lillian A. Anderson, Essie Christensen
Taylor	Mrs. Vera R. Hestekin, Gerald J. Olson
Vilas	Alyce Thompson
Waushara	Betsy Lee, Lois Garlick
Wood	Clara A. Farrell, Nora C. Le Roux

To develop a sight vocabulary and give it the constant practice it requires for successful corrective work in reading, it may be desirable to begin with a narrow vocabulary of well chosen words to be taught and recognized on sight. Such a list of basic service words of the sight vocabulary type is that supplied by Dolch.[1] This list of 220 words for use with children in second grade and upwards, was used as a basis for the present study. To indicate the significance of this list of words a brief resume of the source will be given.

Dolch investigated three available lists of children's words: a vocabulary issued by the International Kindergarten Union, the Gates word list, and the Wheeler and Howell word list.

The first list mentioned includes a list of 2,596 words out of 7,000 words found to be known to children before entering first grade.[2] Words of a frequency of 100 more were chosen making a total of 510 words. From the Gates Word List the first 500 words, or those used with most frequency by children, were taken.[3] Wheeler and Howell studied the frequencies of use of words in ten primers and ten first readers.[4] From this study 453 words were selected on the basis of frequencies and on the assumption that all later grade reading is built upon this early vocabulary.

Dolch used words from the three above mentioned lists with a frequency count of 100 or more to compile a list of 220 tool words. No nouns were included since these are generally tied to some special subject matter, and Dolch assumed that major emphasis is already placed on nouns with a consequent neglect of tool words. Conjunctions, prepositions, pronouns, adverbs, adjectives, and verbs were stressed in the Dolch vocabulary.

In a later study Dolch gave a table to show the value of this Basic Sight Vocabulary list.[5] The table shows the percentage of the basic sight vocabulary to the running words in school textbooks in four subjects.

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[1] Dolch, E. W. "Basic Sight Vocabulary," *Elementary School Journal*, XXXVI (February, 1936), pp. 456–60.

[2] Child Study Committee of the International Kindergarten Union. "Study of Vocabulary of Children before Entering First Grade," (Washington, D. C.: International Kindergarten Union, 1928).

[3] Gates, Arthur. *Reading Vocabulary for Primary Grades*, New York: Bureau of Publications, Teachers College, Columbia Univ., p. 9–13.

[4] Wheeler, H. E. and Howell, Emma. "A First Grade Vocabulary Study," *Elementary School Journal*, XXXI (September, 1930), pp. 52–60.

[5] Dolch, E. W. "First Steps in Remedial Reading," *Elementary School Journal*, XXXVII (December, 1936), pp. 268–72.

Subject of Textbook	Number of Books	Grade I	II	III	IV	V	VI
Reading	4	70	66	65	61	59	59
Arithmetic	2			62	63	57	57
Geography	2				60	59	54
History	2				57	53	52

The above percentage ratings in the several grades and the different subjects were based on a thousand word sampling (including inflected forms) of the basic sight vocabulary in each book. Even though a gradual change was shown in the middle grades, a percentage of over 50 showed the importance of the list in both fifth and sixth grade.

PURPOSE OF STUDY

Using the Dolch Sight Vocabulary List as a basis, the purpose of this investigation was to determine to what extent children in second and third grade of certain rural communities had difficulty in recognizing the selected service words. Growing out of this investigation was an effort to discover which word mispronunciation errors were most prevalent among a small group of these children, and which were most common at different reading grade levels when checkings were based on the Gates Primary Word Recognition Test.

PROCEDURE

For the main part of this study the group tested included 5,971 children from 1,252 rural schools in twenty-two counties of Wisconsin. Of the children 2,749 were in the second grade and 3,222 in the third grade. Test was made of the visual recognition of words, unaided by context. The Dolch Basic Sight Vocabulary list was mimeographed so many copies could be available. Each child was tested individually by his county supervising teacher during the visit to the school concerned. Third grade children were tested during the period from November until February and second grade children, from February to May.

The number of errors was tabulated for each word by the testing person, the county supervising teacher. When his work was done the total number of errors for each word on the list was reported by him to the state supervisor, who had assigned the testing. The complete data was then tabulated and analyzed. Only one combined table and a brief summary of the study is reported here.

TABLE I

DESCENDING RANK ORDER OF DOLCH BASIC SIGHT VOCABULARY LIST BASED ON PER CENT OF ERROR OF NON-RECOGNITION BY 2,749 SECOND GRADE PUPILS (COLUMNS 2 AND 3), COMPARED WITH PER CENT OF ERROR OF NON-RECOGNITION BY 3,222 THIRD GRADE PUPILS (COLUMNS 4 AND 5), AND GROWTH FROM SECOND TO THIRD GRADE SHOWN BY DIFFERENCES IN PER CENT OF ERROR FOR INDIVIDUAL WORDS (COLUMN 6)

1	2	3	4	5	6
Word	Second Grade		Third Grade		Difference in %
	Rank	Difficulty in per cent	Rank	Difficulty in per cent	
start	1	44.88	3	24.73	20.15
done	2	44.01	1	25.20	18.81
use	3	41.68	11	20.88	20.80
full	4	40.52	7	22.59	17.93
wash	5	40.34	6	22.84	17.50
eight	6	39.57	8	21.91	17.66
hurt	7	39.25	2	25.20	14.05
own	8	37.83	4	24.70	13.13
shall	9	36.95	5	23.68	12.27
both	10	35.24	17	19.18	16.06
these	11	35.06	15	19.58	15.48
first	12	34.04	14	19.86	14.18
write	13	33.02	37	14.55	18.47
those	14	31.61	29	16.17	15.44
never	15	30.73	19	18.62	12.11
been	16	30.01	25	16.60	13.41
clean	17	29.57	28	16.20	13.37
better	18	29.42	34	15.20	14.22
thank	19	29.42	20	18.37	11.05
want	20	29.32	18	18.90	10.42
our	21	29.28	13	20.48	8.80
which	22	29.28	48	13.15	16.13
every	23	28.48	8	22.50	5.98
gave	24	28.44	10	21.35	7.09
don't	25	28.37	22	18.09	10.28
pick	26	28.15	45	13.93	14.22
only	27	28.11	27	16.26	11.85
know	28	27.97	12	20.82	7.15
carry	29	27.53	40	14.33	13.20
wish	30	27.53	16	19.46	8.07
kind	31	26.84	50	13.09	13.75
try	32	26.52	63	11.91	14.61
any	33	26.41	33	15.20	11.21
show	34	26.37	23	17.44	8.93
does	35	26.01	49	13.13	12.88
much	36	25.97	46	13.81	12.16
always	37	25.64	30	16.01	9.63
got	38	25.30	35	15.11	10.19
bring	39	24.84	26	16.44	8.40
draw	40	24.84	38	14.46	10.38
off	41	24.62	41	14.18	10.44
fast	42	24.48	31	15.92	8.56
grow	43	23.71	43	14.05	9.66
because	44	23.57	77	10.33	13.24
best	45	23.49	53	12.69	10.80
were	46	23.31	21	18.21	5.10
read	47	23.02	59	12.19	10.83
found	48	22.88	42	14.09	8.79
far	49	22.51	51	12.94	9.57
think	50	22.19	57	12.25	9.94
fall	51	22.08	58	12.22	9.86

TABLE I—Continued

1	2	3	4	5	6
Word	Second Grade		Third Grade		Difference in %
	Rank	Difficulty in per cent	Rank	Difficulty in per cent	
could	52	22.04	47	13.78	8.26
find	53	21.38	66	11.29	10.29
small	54	21.31	74	10.58	10.73
goes	55	21.06	54	12.69	8.37
may	56	21.06	36	14.80	6.26
pull	57	20.94	67	11.17	9.77
their	58	20.80	88	9.46	11.34
light	59	20.66	84	9.74	10.92
open	60	20.37	52	12.88	7.49
hot	61	20.29	105	8.13	12.16
would	62	20.26	64	11.60	9.66
hold	63	20.04	78	10.30	9.74
very	64	20.04	39	14.43	5.61
buy	65	19.86	80	10.08	9.78
came	66	19.86	24	17.25	2.61
now	67	19.79	44	14.02	5.77
live	68	19.71	69	10.98	8.73
laugh	69	19.64	60	12.07	7.57
warm	70	19.64	95	8.65	10.99
many	71	19.46	55	12.60	6.86
where	72	19.02	65	11.51	7.51
ate	73	18.95	32	15.51	3.44
tell	74	18.69	86	9.59	9.10
us	75	18.62	61	12.07	6.55
together	76	18.58	87	9.52	9.06
once	77	18.44	76	10.42	8.02
give	78	18.26	79	10.21	8.05
upon	79	18.26	82	9.87	8.39
please	80	18.19	56	12.29	5.90
why	81	17.97	68	11.01	6.96
right	82	17.67	89	9.40	8.27
seven	83	16.88	108	7.79	9.09
has	84	16.69	75	10.42	6.27
went	85	16.69	72	10.70	5.99
made	86	16.62	73	10.61	6.01
sit	87	16.51	70	10.72	5.78
drink	88	16.33	81	9.96	6.37
keep	89	16.22	102	8.19	8.03
how	90	15.96	71	10.70	5.26
have	91	15.56	97	8.53	7.03
well	92	15.56	91	9.00	6.56
new	93	14.91	98	8.53	6.38
again	94	14.87	90	9.28	5.59
let	95	14.73	96	8.56	6.17
cut	96	14.66	114	7.29	7.37
over	97	14.58	104	8.16	6.42
myself	98	14.47	131	6.17	8.30
five	99	14.33	101	8.28	6.05
must	100	14.29	83	9.80	4.49
sing	101	14.18	112	7.54	6.64
ask	102	14.11	130	6.23	7.88
what	103	14.11	85	9.65	4.46
after	104	13.96	121	6.79	6.17
about	105	13.71	92	8.84	4.87
there	106	13.71	109	7.79	5.92
with	107	13.67	99	8.53	5.14
work	108	13.60	107	7.94	5.66
ran	109	13.53	62	12.04	1.49
or	110	13.38	125	6.54	6.84
say	111	13.27	94	8.75	4.52
of	112	13.20	120	6.85	6.35
take	113	12.98	106	7.94	5.04

TABLE I—Continued

1	2	3	4	5	6
Word	Second Grade		Third Grade		Difference in %
	Rank	Difficulty in per cent	Rank	Difficulty in per cent	
put	114	12.69	93	8.78	3.91
funny	115	12.55	103	8.16	4.39
white	116	12.25	111	7.60	4.65
am	117	12.07	100	8.34	3.73
round	118	12.04	113	7.38	4.66
when	119	11.96	110	7.69	4.27
them	120	11.89	119	6.92	4.97
pretty	121	11.78	118	7.07	4.71
will	122	11.60	137	5.89	5.71
cold	123	11.53	134	6.05	5.48
sleep	124	11.53	116	7.26	4.27
here	125	11.38	122	6.79	4.59
call	126	11.24	141	5.58	5.66
help	127	11.05	124	6.58	4.47
ride	128	10.95	115	7.29	3.66
your	129	10.91	126	6.45	4.06
make	130	10.44	129	6.30	4.14
his	131	10.33	127	6.33	4.00
out	132	10.11	132	6.17	3.94
stop	133	10.11	146	5.15	4.96
walk	134	10.07	136	5.89	4.18
before	135	10.00	159	4.31	5.69
under	136	10.00	135	5.99	4.01
as	137	9.96	162	4.03	5.93
but	138	9.96	149	4.99	4.97
then	139	9.89	117	7.23	2.66
fly	140	9.85	128	6.30	3.55
from	141	9.85	145	5.27	4.58
some	142	9.78	138	5.71	4.07
its	143	9.60	143	5.36	4.24
soon	144	9.45	123	6.61	2.84
if	145	9.31	161	4.25	5.06
get	146	9.24	139	5.67	3.57
ten	147	9.24	167	3.78	5.46
just	148	9.16	144	5.34	2.82
was	149	9.13	133	6.11	3.02
around	150	8.80	142	5.49	3.31
this	151	8.76	163	3.97	4.79
three	152	8.58	154	4.53	4.05
an	153	8.47	164	3.87	4.60
yes	154	8.47	155	4.50	3.97
long	155	8.44	166	3.84	4.65
no	156	8.33	147	5.09	3.24
saw	157	8.18	150	4.96	3.22
had	158	8.07	152	4.81	3.26
come	159	7.93	140	5.61	2.32
like	160	7.89	153	4.78	3.11
who	161	7.56	158	4.34	3.22
did	162	7.31	169	3.16	4.15
going	163	7.27	160	4.28	2.99
that	164	7.23	165	3.87	3.36
they	165	7.20	151	4.93	2.27
run	166	7.13	157	4.40	2.73
away	167	7.09	148	4.99	2.10
said	168	6.84	171	2.97	3.87
four	169	6.50	170	3.10	3.40
eat	170	6.36	168	3.25	3.11
green	171	5.49	177	2.42	3.07
on	172	5.31	182	2.26	3.05
her	173	5.20	156	4.46	.74
him	174	5.02	173	2.54	2.48
are	175	4.81	185	2.04	2.77

TABLE I—Continued

1	2	3	4	5	6
Word	Second Grade		Third Grade		Difference in %
	Rank	Difficulty in per cent	Rank	Difficulty in per cent	
do	176	4.62	172	2.79	1.83
by	177	4.54	180	2.35	2.19
so	178	4.54	183	2.26	2.28
all	179	4.40	190	1.89	2.51
at	180	4.36	174	2.48	1.88
my	181	4.25	189	1.92	2.33
black	182	4.22	186	2.04	2.18
one	183	4.14	199	1.48	2.66
little	184	4.03	196	1.67	2.36
not	185	3.92	179	2.39	1.53
today	186	3.82	193	1.83	1.99
be	187	3.78	194	1.73	2.05
six	188	3.74	178	2.42	1.32
brown	189	3.67	198	1.55	2.12
good	190	3.67	184	2.20	1.47
can	191	3.52	188	1.98	1.54
look	192	3.45	181	2.29	1.16
me	193	3.38	187	2.01	1.37
is	194	3.27	175	2.48	.79
old	195	3.27	203	1.21	2.06
for	196	3.20	176	2.42	.78
down	197	2.98	192	1.86	1.12
play	198	2.76	201	1.36	1.40
it	199	2.40	200	1.45	.95
jump	200	2.36	191	1.89	.47
red	201	2.32	212	.68	1.64
big	202	2.22	205	1.05	1.17
we	203	2.14	206	1.05	1.09
you	204	2.14	204	1.08	1.06
go	205	2.07	195	1.67	.40
he	206	1.92	197	1.58	.34
yellow	207	1.92	207	.93	.99
she	208	1.78	2.3	.65	1.13
blue	209	1.63	214	.62	1.01
up	210	1.60	208	.80	.80
and	211	1.41	209	.74	.67
into	212	1.38	216	.49	.89
see	213	1.16	211	.71	.45
in	214	1.09	202	1.21	.12
the	215	1.09	210	.74	.35
two	216	.94	217	.34	.60
to	217	.76	219	.24	.52
too	218	.72	218	.27	.45
I	219	.69	215	.49	.20
a	220	.36	220	.18	.18

SUMMARY AND CONCLUSIONS

The difficulty of the Dolch Basic Sight Vocabulary in the second and the third grade of the rural schools in twenty-two Wisconsin counties is the theme of this paper. An investigation was made in the hope of answering a question about whether or not a greater amount of knowledge of sight vocabulary needs would give facts which might be beneficial in the teaching of reading.

Thirty-four supervising teachers of 22 Wisconsin counties assisted in collecting data for which the Dolch Basic Sight Vocabulary List was given to 2,749 second grade and 3,222 third grade pupils. Resultant data have been analyzed in the preceding table (and others not shown here) and the following more general conclusions may be given:

1. About 80 per cent of second grade and of third grade had mastered 155 and 207, respectively, of the easiest words out of the list of 220. When both grades were combined as to scores, about 80 per cent had mastered the 185 easiest words of the list of 220. When scores of third grade were compared with those of second grade, the range of frequency of errors and the median scores showed that the third grade was making progress.

2. The Dolch list of words arranged according to difficulty for second or third grade or for the two grades combined is a fairly accurate primary reading scale with but few breaks in its continuity.

3. Words not in Hockett's primer vocabulary list were found in general in the group of words having the greatest frequency of errors. It may be assumed, then, that the greater the repetition of words in several readers, the greater the word mastery.

4. The frequency ranking of words for the different parts of speech showed that verbs, adjectives, and adverbs gave more difficulty in learning than conjunctions, prepositions, and pronouns. The fact that there are more verbs, adjectives and adverbs on the list may be an influencing factor in this respect.

5. The mastery of the 12 most difficult words gave an increase of 13 per cent or more between the second and the third grade scores. With an average of only six-tenths of a year of difference in school age between the grades (due to difference in time of testing) this growth is important. Exception to the increase in growth was noted in the case of the word "in", which actually showed a loss between second and third grade.

6. The types of error, part reversal and non-recognition of word, showed high percentages in each grade in each of two counties for which word mispronunciation errors were studied more intimately. However, in the two counties the situations in regard to wrong in the beginning of the word and wrong in the ending of the word were reversed, with the situation in County II at variance with the Gates expectancy.

7. Errors presented about the same percentage ratio at each reading grade level when these were checked against those of the Gates Word Recognition Test.

Helps for the teaching program resulting from the inventory testing are many; three of these are as follows:

1. A careful selection of beginning readers by teachers or supervising teachers should result from this study. Basic books and other books with a great amount of repetition of service words are needed.

2. Teaching techniques, adapted to the uncovered needs, may be planned for by the supervising teacher who then can give more intelligent help to teachers.

3. Through this work with the Dolch Vocabulary Word List the teacher may easily find the child who depends upon the context for the recognition of too many words and, accordingly, plan remedial helps.

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EDITORIAL

CASE STUDY AND CASE WORK

THE essential procedure of the case-study method is to take account of all pertinent aspects of one thing or situation, employing as the unit for study an individual, an institution, a community, or any group considered as a unit. The case consists of the data relating to some phase of the life history of the unit or relating to the entire life process, whether the unit is an individual, a family, a social group, an institution, or a community. The complex situation and combination of factors involved in the given behavior are examined to determine the existing status and to identify the causal factors operating.

Some writers make a distinction between the terms "case study," "case work," and "case method." As defined above, case study means intensive investigation of the particular unit represented. Case work refers especially to the remedial or corrective procedures that appropriately follow diagnosis of the causes of maladjustment. For example, social case work consists of the processes and procedures necessary in rendering service, financial assistance, or personal advice to individuals by representatives of social agencies, with due consideration of established policies and individual need. Case study and case work, even though they may not be done by the same person or agency, are complementary processes. The expression, case method, frequently has been employed to describe a plan of organizing and presenting instructional materials in law, medicine, social work, and even in education, psychology, and sociology. As a rule, the case materials used are the product of case-study investigation.

Case study as an investigational procedure usually employs other research techniques. To trace successfully the life history of an individual or the developmental processes of an institution or a community depends on judicious use of the sources and principles of historical research. Case study frequently utilizes such data-gathering instruments as tests, questionnaires, check lists, score cards, and rating scales. Direct observation is essential in

most instances. The interview may serve as a device for observation of symptoms, collection of data, diagnosis, treatment, and follow-up. Certain of the developmental case studies are also genetic in character, as when tracing the growth of individual children, although ordinarily the movement of the case study is backward and that of the genetic method is forward. Statistical techniques are employed when cases are classified and summarized to reveal frequencies, types, trends, uniformities, or patterns of behavior. This statement of the relationships between case study and other problem-solving approaches emphasizes once more the complementary and supplementary uses of research techniques.

Earlier in this editorial, case study is characterized as intensive investigation of the unit under consideration, and case work as the adjustment or treatment procedure employed. These complementary processes may be analyzed as a sequence of steps, although they may not be carried out by the same person or agency. Also, it should be pointed out that, while continuity in study, diagnosis, and treatment is a logical sequence, with the steps differentiated intellectually, in an actual life situation these steps may weave in and out shuttle-like. While interviewing a person to collect information, certain treatment may take place, and later, when employing adjustment procedures, additional evidence may be secured.

The complementary steps in the cycle of case study and case work are as follows:

1. Recognition and determination of the status of the phenomenon to be investigated; for example, reading disability.

2. Collection of data relating to the factors or circumstances associated with the given phenomenon; factors associated with learning difficulty or reading disability may be physical, intellectual, pedagogical, emotional, social, or environmental.

3. Diagnosis or identification of causal factors as a basis for remedial or developmental treatment; defective vision may be the cause of difficulty in reading.

4. Application of remedial or adjustment measures; correctly fitted glasses may remove the cause of the poor performance in reading.

5. Subsequent follow-up to determine the effectiveness of the corrective or developmental measures applied.

The objectives of case study are no longer limited to consideration of situations or conditions of maladjustment, such as a behavior problem in school, a broken home, or an underprivileged community. Case study of normal or well adjusted children, of effectively functioning institutions, and of well organized communities aids in understanding the normal situation or well adjusted condition and places deviation from normal in proper perspective.

CARTER V. GOOD.

REVIEWS

Address all communications relative to book reviews to Editor Kai Jensen, University of Wisconsin, Madison, Wisconsin.

THAYER, V. T., ZACHRY, CAROLINE B., and KOTINSKY, RUTH. *Reorganizing Secondary Education.* New York: D. Appleton–Century Company. 1939. pp. XV + 483. $2.75.

Reorganizing Secondary Education is the work of the Commission on Secondary School Curriculum of the Progressive Education Association. The Commission at the time of its appointment in 1932 was charged with the task of surveying the problems in secondary education in need of reorganization. This need had been clearly revealed by an earlier Commission of the Progressive Education Association which had been established to investigate the relations of secondary schools and colleges. The findings of this Commission revealed a very urgent need for a study of the meaning and function of progressive education in secondary schools. Accordingly, the second commission was set up to give special attention to the educational needs of adolescents in all types of schools. The volume under review is the report of the seven years of study by the Commission of the specific problem to which it was assigned.

The report consists of an introduction and three parts subdivided into eleven chapters. The introduction sets forth the reasons given by the Commission for undertaking an examination of secondary education. These reasons are: (1) changes in the conditions affecting youth of secondary-school ages: (2) changes in the enrollment of secondary schools; (3) new concern for the training of pupils to understand and appreciate the democratic way of life; and (4) elimination of confusion with respect to the purposes and practices of secondary education.

Part I considers the theoretical foundations of secondary-school reorganization (1) in the light of the needs of adolescents and (2) in the direction of desirable growth. Criticism is made of past efforts of the secondary school to prepare adolescents to meet the requirements of adult life, that is, vocation, citizenship, family life, and other social responsibilities. The authors hold that the secondary-school curriculum has paid scant attention in the past to the demands of the youth's personality—"as though, indeed, he had no organized self with its own particular desires and claims upon life" (p. 26). They hold further that "the learner must be conceived as a physical-social-emotional-intellectual personality," and that "in order to know 'where' he is, it is necessary to know the stage of his development in all of these respects—to be able to tell not only the intellectual responses he can make in a given academic situation, but what responses he does make to the variegated situations of his life, how he feels about them, which ones he seeks and which he avoids. Without knowing this it is impossible to

guess what these situations mean to him, what his experiences are, what he learns by consequence" (p. 33).

Since understanding of the world the learner seeks and must have, the problem of the school is to assist him in acquiring it, but it must be the learner's own world that he comes to understand, not that of the academician. The authors think that this understanding will be acquired and personality developed "only through solving problems felt as relevant to the on-going life of the learner" (p. 35).

In Part II the problems of meeting the needs of adolescents in a democracy are discussed. Four crucial areas of adolescent needs are considered: (1) immediate social relationships, (2) wider social relationships, (3) economic relationships, and (4) personal living. The discussion of these needs is introduced by a chapter dealing with the developing personality of the adolescent and is concluded by a chapter entitled, "Helping Students Formulate the Democratic Tradition."

The third part of the volume deals with the contributions of organization in the reorganization of the secondary school to meet the needs indicated. From the point of view of the student, guidance is considered as the educational service through which the pupil successfully realizes his needs. Democratic relations between administrative officers and teachers, an appropriate curriculum, and the evaluation of pupil progress are regarded as essential to the realization of student needs.

The volume sets forth the basic philosophy and point of view of all the specialized studies and textbooks produced by the several commissions and committees of the Progressive Education Association concerned with the education of adolescents. Administrative officers and teachers in secondary schools will find the volume well worth careful study.

WILLIAM C. REAVIS.
University of Chicago

CENTER, STELLA S. and PERSONS, GLADYS L. *Experiences in Reading and Thinking*. New York: The Macmillan Co. 1940. pp. XI + 393. $1.20 (Work books each $.60).

CENTER, STELLA S. and PERSONS, GLADYS L. *Practices in Reading and Thinking*. New York: The Macmillan Co. 1940. pp. XIII + 471. $1.40 (Work books each $.60).

CENTER, STELLA S. and PERSONS, GLADYS L. *Problems in Reading and Thinking*. New York: The Macmillan Co. 1940. pp. XI + 657. $1.80 (Work books each $.60).

Although this three-book series is designed primarily to improve reading speed and comprehension among junior and senior high school students, the last volume is also adapted to college students and other adults. "Reading is thinking." Since the viewpoint taken is that individuals read no better than they think, training in reading is considered to be primarily training in thinking. The variety of material permits choice of selections to fit the interests and abilities of pupils. Suggestions for teaching of the units are based upon the classroom experience of the authors.

The chief features of the series include: (1) a wide range of reading patterns such as reading to acquire information, to discover proof, etc.; (2) a variety of subject matter; (3) emphasis

upon getting ideas and following author's organization of thought; (4) exercises to promote adequate and appropriate training; (5) attention to vocabulary training; and (6) treating reading and writing as complementary arts. There is some attention devoted to oral reading.

Desirable emphasis is placed upon flexibility of reading habits in order to adapt the reader to the purposes of the reading and to the nature of the material. The view that reading is thinking is sound. Greater emphasis upon this and less upon mechanics of reading as such is highly desirable. The authors are somewhat inconsistent. Thus, while stressing "reading as thinking" they also state that, for a complete diagnosis of reading performance, eye-movement photographs must be taken. Furthermore, they appear to hold that the establishment of rhythm of eye-movements in reading is important. Whether or not regularity of eye-movement sequences is a mark of effective reading depends upon the nature of the material and the purpose for which the reading is done. It has been demonstrated experimentally that eye-movement "rhythm" occurs most frequently when "reading" with zero comprehension. In many situations the most effective reading is done when there are regressions and also a variation in frequency of eye-fixations from line to line.

The authors have done a good job in the selection and organization of material in these books. The material can be used with profit in those school systems where improvement of reading at the high school level is taken seriously. Too frequently the teacher has neither the time nor the facilities to organize reading materials as she goes along.

The trend toward greater emphasis upon the development of effective reading among high school and college students should be fostered. Not only is the ineffective reader handicapped in the economy of time, but also he frequently has difficulty in understanding and assimilating what he attempts to read. Nearly every person reads below capacity. It seems desirable, therefore, that a reading program at the higher levels as well as in the elementary school should aim at improving the reading proficiency of every pupil. Too frequently an attempt is made to improve the efficiency of only those with "reading disability."

MILES A. TINKER.

University of Minnesota

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DOLCH, EDWARD W. *A Manual for Remedial Reading*. Champaign, Illinois: The Garrard Press. 1939. pp. X + 166. $2.00.

Children with reading difficulties may be divided into two groups: the small minority of non-readers, and the great majority of retarded readers. The author believes that almost all of the latter group can be given attention and help by the classroom teacher, or by a special teacher who has given some study to remedial reading. This manual is written for the guidance of such teachers. It deals with the treatment of reading problems of the simpler sort, leaving to the reading clinic the "complex cases," the "strange and unusual cases," and "such as resist ordinary efforts." Methods of diagnosis and analysis are given, as well as methods for the help of the retarded reader at each grade level. The author states that any teacher can follow these methods with great success.

After a discussion of the relation to reading of the child's personality problems, his physical condition, and his home and school life, analysis of the child's reading status is described. Needed facts include the grade level of books easily read, the child's sight vocabulary, amounts of miscalling and self-correction, sounding practices, eye-movement habits, and lip movements. Tests are to be used to aid the teacher's judgment, not to replace it. The special problems and methods for grade levels from primary to high school are then discussed. Individual remedial reading, special disabilities, study skills in relation to reading, and the role of testing in remedial reading receive attention.

Desirable emphasis is placed on reading at the proper level of ability, and on the importance of context in reading. The role of oral reading, of sounding practices, and of sight vocabulary is well stated. Uses of the Ophthalmograph and the Metronoscope are discussed with proper reservations about their value.

In keeping with his objective of preparing a manual, the author has subdivided and re-subdivided topics, often to disadvantage. Certain treatments often sound repetitious. Much of the material seems obviously over-simplified. A citation of experimental findings, and listing of teacher aids for remedial reading would have increased considerably the value of this work.

As a manual for those inexperienced in remedial reading work, this book will serve a useful purpose, and should receive the consideration of the serious teacher of reading.

KENNETH E. CLARK.

University of Minnesota

KNELLER, GEORGE FREDERICK. *The Educational Philosophy of National Socialism.* New Haven: The Yale University Press. 1941. pp. VIII + 299. $3.50.

One dismaying characteristic of this book is that it is "timely" in 1941. As the author intimates, it should have been timely years ago—at the very least, six years ago. But then, for more than 150 years Americans have been slow to pay much attention to the possible effects of anything that occurs beyond the continental limits of the United States.

The thoughtful American who reads between the lines of Kneller's dispassionate, scholarly report of his study of *The Educational Philosophy of National Socialism* is quite likely to feel the chills of apprehension running up and down his spine as he realizes the singleness of purpose, the unified, uncompromising, enthusiastic determination shown, in theory at least, by National Socialism in advancing the interests of the German people onward and upward and outward and all around. By concentrating on this one aim—and making that include every factor of German life—"with no holts barred," the National Socialist German Weltanschuung appears to be dynamic in the extreme.

Germany's "challenge of beliefs, into which the energies of a sturdy people have gone and the vitality of a whole generation is being poured," is certainly making a lot of noise in the world today. As Kneller points out, "It is upon the thoroughness with which we seek to understand it, however lofty and tortuous its language, that some means of dealing with its vital elements ultimately depends."

The aim of National Socialism toward progress "does not simply co-operation with other nations for universal progress, but sets up a standard of values which grants Germany the privilege of asserting her 'rightful position' in the world regardless of other standards."

A little farther Kneller remarks, "A teacher may well be perplexed if a bright pupil hazards questions as to what would happen if the 'rightful claim' of another nation were placed upon the goods and possessions demanded by the 'rightful claim' of Germany. His embarrassment would be still greater if the pupil has at any time been taught that no two bodies can occupy the same space at the same time." It seems to me that Kneller must have had an American teacher in mind, because, from his subsequent description of the present-day German teacher, it appears to me that the latter is never embarrassed over anything at any time.

Today in Germany "Teacher authority over pupils is guaranteed both in and out of school, where the parent is not in immediate control. Teachers are youth leaders as well as classroom managers. The dignity and authority of this office demand strict obedience and respect from pupils, with no toleration of undue parental criticism." The teacher determines whether parental criticism is undue or not.

"In brief the training of the elementary-school teacher consists of four years in the Volkschule, eight years in the secondary-school, two or three years' compulsory service for the Reich (work service and the army), two years' professional training and probation, and a final examination on 'common-sense' teaching problems. At the age of twenty-four or twenty-five, the teacher is permanently accepted.

"The training of the secondary-school teacher differs from that of the elementary-school teacher in that his higher education, involving a period of from eight to twelve semesters, terminates in the doctor's degree. After this, he spends two years in a seminary connected with a secondary school, the obvious purpose being to experience the life of a teacher before accepting a permanent position. The long-awaited appointment comes five years later, when the candidate is about twenty-seven years old, and is dependent upon the demand."

There you have the picture of a rugged "outdoor man, skilled in sports and military technic, and * * at the same time * * in some sense a statesman, well grounded in National Socialism, and well trained in the inculcation of its principles."

The book is divided into ten sections, followed by a 28-page bibliography, an appendix, and an index:

I. The Situation.
II. The Virus of National Socialism. 1, Weltanschung; 2, Volk and Race; 3, The Party and Its Program.
III. Concept of a State. 1, The New Volkstaat; 2, Individual Freedom; 3, Education for an Elite; 4, Kulture and the Arts; 5, Administrative Principles.
IV. Backgrounds. 1, National Idealism and Education; 2, Transition through Criticism; 3, Metaphysical Roots; 4, The Youth Movement; 5, Educational Liberalism and the Republic; 6, Attacks on Educational Heritage.

V. The Pattern of Education. 1, Hitler's Educational Ideals; 2, Harmonizing the Faculties.
VI. The Road of German Youth. 1, Education through Breeding; 2, The Hitler Jugend; the Socialization of Youth; 3, Arbeitsdienst; Education through Labor; 4, Wehrpflicht; Comradeship in Arms.
VII. The State and Religion in Education.
VIII. The "New Intellectualism." 1, School Reform; 2, The National Socialist Teacher; 3, Irrationalism and the University.
IX. The Totality of Education. 1, Training for Womanhood; 2, Adult Education.
X. Ideological Overtones.

"Broadly speaking," remarks Kneller at one point in his discussion of the educational philosophy of National Socialism, "the observer is forced to this general conclusion: the state as an educator must be all-embracing, and must find in the army the pinnacle of its educational endeavor."

Before you try to laugh that off, you'd better read the book and get yourself some of the goose pimples that have been cropping out on me as you realize what you are likely to be up against—unless we do something about it.

We do have this ray of hope when Kneller says that, "It is very easy to draw distinct lines between theory and practice * * *. But the author has had sufficient contact with the actual workings of German schools to know that the more sensational National Socialist ideology is not so fully practiced in the classroom as many reports would have us think. * * * it seems evident that in Germany, as elsewhere, practice lags a good many years behind theory. * * * It is a platitude that schools are always among the slowest institutions to respond to social change."

Just the same—no matter whether there is some lagging over there or not—it is high time that we comparatively easy-going, more or less rugged individualists get as much information as we can from Kneller and other clear-writing, careful students so as to be able to plan how to withstand a closely-knit, nationally minded, go-getting organization that is capable of causing co-operation with a club.

MILES GLORIOSUS.

GESELL, ARNOLD L. and AMATRUDA, CATHERINE S. *Developmental Diagnosis: Normal and Abnormal Child Development, Clinical Methods and Practical Applications.* New York; London: Paul B. Hoeber inc. 1941. pp. XIII + 447. $6.50.

Developmental Diagnosis is another of the important contributions by Gesell and his associates at the Yale Clinic of Child Development, where so much has been done toward devising genetic methods of research and in carrying forward developmental studies. Among the more recent of these publications are: *An Atlas of Infant Behavior, The Psychology of Early Growth, Biographies of Child Development,* and *The First Five Years of Life.*

While *Developmental Diagnosis* is addressed primarily to the physician, it contains much of value to educational and psychological workers. It is true that much of the background material on which the new book is based has appeared elsewhere, addressed more di-

rectly to workers in education and psychology.

Part I discusses techniques for the developmental examination of behavior and norms of development. Part II deals with diagnosis of the defects and deviations of development: amentia, endocrine disorders, convulsive disorders, neurological diagnosis of infant behavior, cerebral injury, special sensory handicaps, prematurity, precocity, environmental retardation, and clinical aspects of child adoption. Specialists in education and psychology may well be familiar with such deviations, even though the diagnosis itself is reserved for technicians with medical training. Part III considers the protection of early child development from the point of view of diagnosis and guidance, and of developmental supervision. The appendices include detailed materials and exhibits concerned with examination technique and equipment.

CARTER V. GOOD.
University of Cincinnati

ALEXANDER, CARTER. *How to Locate Educational Information and Data.* (Second Edition) New York: Bureau of publications, Teachers College, Columbia University. 1941. pp. XIV + 443. $4.00.

JOUGHIN, GEORGE LOUIS. *Basic Reference Forms: A Guide to Established Practice in Bibliography, Quotations, Foot Notes, and the size Format.* New York: F. S. Crofts and Co. 1941. pp. XI + 94. $.80.

The revised and expanded edition of *How to Locate Educational Information and Data* is a marked improvement over the first edition of 1935. As a text and handbook of library usage in a special field, it is much more detailed in its treatment of educational guides and materials, and therefore is correspondingly more useful to workers in education, than Mudge's *Guide to Reference Books* and Shores' *Basic Reference Books.* In addition to description of the various guides and procedures for locating a wide range of educational materials, there are discussions of the development of the topic to be investigated, reading techniques, note-taking, and bibliography-making. Units of "library experiences" have been prepared to accompany the text, although not under the same cover.

Basic Reference Forms consists of numerous examples for use in dealing with bibliographical items, quotations, footnotes, and thesis format. Special reference forms are illustrated for law, government publications, chemistry, physics, biological sciences, medicine, engineering, and unpublished material.

CARTER V. GOOD.
University of Cincinnati

WIRTH, LOUIS, Editor. HUTCHINS, ROBERT MAYNARD, BRUERE, HENRY, RUML BEARDSLEY, and others, Contributors. *Eleven Twenty-Six: A Decade of Social Science Research.* Chicago: University of Chicago Press. 1940. pp. XV + 498. $3.50.

MCALLISTER, ETHEL M. *Amos Eaton: Scientist and Educator.* Philadelphia: University of Pennsylvania Press. 1941 pp. XIII + 587. $5.00.

The first of these books is a biography of an institution, or of a portion of an institution, if it may be said that a building and the workers who occupy it have a professional life history. The second volume is a biography of an individual.

Eleven Twenty-Six is far from revealing as a title. It turns out to be none of

the following: a date, the number of a W.P.A. project, the total number of studies conducted in some field, a formula, or a code. As the Frontispiece reveals, it is the street number of the Social Science Research Building at the University of Chicago. The subtitle of the book, *A Decade of Social Science Research*, suggests that the contents may be a review of some sort, somewhere. The building, dedicated in December, 1929, is said to be the first structure in any American university devoted exclusively to research in social science. In December, 1939, a conference was held to celebrate the accomplishments of the first decade in the new building. The book includes the papers presented, the proceedings of the round tables, and an extensive bibliography of publications by the Chicago workers in social science, including education, during the decade. The existence of such a building and its equipment, together with the close contacts between workers in related fields, undoubtedly has been, and is, a stimulating environment for research and productive work.

The biography of Amos Eaton was written as a doctorate dissertation, under the direction of Thomas Woody at the University of Pennsylvania. The life and contributions of Eaton are traced in detail, with liberal citations from the great mass of available source materials. He is described as one of the great leaders in the history of science and education in the United States; as founder and director of the destinies of Rensselaer Polytechnic Institute until his death; and as a pioneer worker in agriculture, botany, chemistry, geology, and zoology. This is a type of historical dissertation that might well be written more frequently by students with the appropriate training, insight, and patience to locate the necessary documents, to subject the sources to the process of criticism, and to synthesize the evidence into an effective narrative. The writing of an adequate, comprehensive history of education is dependent on a large number of such specialized, individual contributions.

CARTER V. GOOD.
University of Cincinnati

WEYER, FRANK ELMER. *Presbyterian Colleges and Academies in Nebraska.* Hastings, Nebraska, Democrat Printing Co. 1940. pp. VII–XI + 242.

This is a most valuable historical study of the educational work of the Presbyterians in Nebraska. It deals with the following institutions: Otoe University, 1868–1872, Nebraska City; Bellevue College, 1880–1934, Bellevue; Oakdale Seminary, 1881–1891, Oakdale; Hastings College, 1882– , Hastings; and Pawnee City Academy, 1883–1908, Pawnee City. It should be noted that it covers the period "from the earliest territorial days to the present time" and that two types of institution are included, viz: (1) Secondary (i.e. academies or seminaries) and (2) Colleges and universities. Elementary, theological, and technical education are not included.

The value of historical research in the field of American higher education is becoming increasingly evident. The past year has produced two books[1] which deal with the history of our system of college and university education, and graduate courses in the subject are appearing for the first time in university catalogues.

[1] R. F. Butts, *The College Charts its Course.* McGraw Hill.
Edgar W. Knight, *Twenty Centuries of Education.* Ginn and Co.

In addition to the historical feature there is one chapter of over sixty pages in this study which deals with "Personnel, Finance and Curricula in Bellevue and Hastings Colleges."

In his method of research Dr. Weyer goes back constantly to source materials and original documents, making his bibliography a contribution in itself. In this bibliography are included minutes of church bodies of the Presbyterian Church, of governing boards in the institutions studied, court records, magazines, college publications, and student newspapers and annuals.

Among the author's most significant conclusions we list the following: (1) That the origin of this entire enterprise in Presbyterian education dates back to 1834, in a mission to the Pawnee Indians in Nebraska; (2) That when the Indians were removed from the state by the federal government and the territory opened to settlement by the whites in 1854 there was need of a ministering to new settlers of whom many were Presbyterians. This led to the forming of the Presbytery of Omaha (1858) which at once gave its attention to education.

At this point it should be noted that the Presbyterian philosophy of education included the concept that provision should be made by the state for universal education and that the church was, as it were, pioneering in secular education until such time as the state could make proper provision.

Then followed the labor of the church through the years resulting in the founding of the institutions mentioned above. The fact that five institutions were founded while only one (Hastings College) remains the author attributes in part to lack of planning and cooperative action and, in part, to the rise of the public high school. He calls attention to the fact that where the academy formed the preparatory division of the college, as at Bellevue and Hastings, the decline was less disastrous and more gradual. At this point he mentions but does not discuss what might have happened if the academies should have advanced to the junior college level or if some of the four-year institutions had become junior colleges. To the present reviewer it seems improbable that the private academies could ever have weathered the storm in competition with the public high school.[1]

The quality of the work found in this research is that of the scholarly, thorough investigator and the book presents a most valuable contribution to the field of the history of American higher education.

J. O. CREAGER.

New York University

[1] See Chancellor E. E. Brown's *The Making of our Middle Schools.*

Research Abstracts and Bibliographies

Address all communications relative to research abstracts and bibliographies to A. S. Barr, University of Wisconsin, Madison, Wisconsin.

BULLETINS

BALDWIN, J. W. *A Survey of the Present Status and Current Trends in the Social Studies Curriculum in Texas Schools.* The University of Texas Publications, No. 4132. Austin, Texas: The University of Texas, August, 1941. Pp. 73.

The author presents a survey of changes in course offerings in social studies programs in Texas schools since 1934–35, with data on topics and activities employed in social studies programs.

BELL, REGINALD, CAIN, LEO F., LAMOREAUX, LILLIAN A. *Motion Pictures in a Modern Curriculum:* A Report on the Use of Films in the Santa Barbara Schools. American Council on Education Studies, Series II—Motion Pictures in Education, Vol. 5, No. 6. Washington: The American Council on Education, May 1941. Pp. ix + 179.

This is one of a series of reports of the Motion Picture Project of the American Council on Education. This reports on the use of films in the Santa Barbara Schools.

BREARLY, H. C. *Southern Regional Materials in Social Science.* Field Study No. 8. Nashville, Tennessee: The Division of Surveys and Field Studies, George Peabody College for Teachers, 1941. Pp. 34.

This booklet has been prepared to help teachers and pupils in obtaining and using regional and local materials in social science classes.

BROOKER, FLOYDE E. and HERRINGTON, EUGENE H. *Students Make Motion Pictures:* A Report on Film Production in the Denver Schools. American Council on Education Studies, Series II—Motion Pictures in Education, Volume V, No. 7. Washington: The American Council on Education, May 1941. Pp. vii + 142.

This report is one of a series released by the Motion Picture Project of the American Council on Education. This report is an account of student production of motion pictures on community problems and activities in the Denver High Schools.

COCHRAN, BLAKE. *Films on War and American Policy.* American Council on Education Studies, Series II—Motion Pictures in Education, Volume IV, No. 4. Washington: The American Council on Education, October 1940. Pp. vii + 63.

A revision of an earlier bulletin on films dealing with war backgrounds and American neutrality.

ENGELHARDT, N. L. and MORT, PAUL R. *A School Building Program for South Kingstown, Rhode Island.* Providence, Rhode Island: Department of Education, June 1941. Pp. 40.

A survey of South Kingstown, Rhode Island, with plans for a building program.

FINLEY, RAYMOND STEVENS. *The History of Secondary Education in Kennebec County in Maine.* The Maine Bulletin, Volume XLIV, No. 2; University of Maine Studies, Second Series, No. 54. Orono, Maine: University Press, 1941. Pp. vii + 119.

It is the purpose of this study to present the essential facts concerning the early history of secondary education in Kennebec County, Maine.

GANS, ROMA. *Guiding Children's Reading Through Experiences.* Practical Suggestions for Teaching, Number 3. New York: Bureau of Publications, Teachers College, Columbia University, 1941. Pp. ix + 86.

Discusses such topics as guiding reading readiness, increasing word recognition, increasing depth and accuracy of comprehension, evaluating progress in reading and related progress.

JENKINS, FRANK C., and OTHERS. *A Report of the Work with the Thirty-Three Cooperating Secondary Schools, 1938–1941.* The Southern Association Study, Monograph No. 1, Publications of the Commission on Curricular Problems and Research of the Southern Association of Colleges and Secondary Schools. Nashville, Tennessee: The Commission on Curricular Problems and Research of the Southern Association of Colleges and Secondary Schools, 1941. Pp. vii + 68.

This monograph is the first of a series of publications of the Commission on Curricular Problems and Research designed to furnish information concerning the origin, nature, and work of the Southern Association Study in Secondary Schools and Colleges.

KATSH, ABRAHAM I. *Hebrew in American Higher Education* (And an Analysis of Hebrew Influence on American Life). New York: New York University Bookstore, 1941. Pp. v + 182.

The writer presents the results of study of the influence of Hebrew upon English speaking people.

KELLEY, IDA B. and PERKINS, KEITH J. *An Investigation of Teachers' Knowledge of and Attitudes Toward Child and Adolescent Behavior in Everyday School Situations.* Bulletin Purdue University, the Division of Educational Reference, Studies in Higher Education, Volume XLII, Series IV, Further Studies in Attitudes. Lafayette, Indiana: Purdue University, 1941. Pp. 101.

The study here reported attempts to throw some additional light upon some of the factors related to adequate teacher insight into the education of the whole child.

LAZAR, MAY. *Individualization of Instruction in Reading.* Educational Research Bulletin of the Bureau of Reference, Research, and Statistics, No. 1. New York: Board of Education, September 1941. Pp. vi + 42.

The first of a series of bulletins on the individualization of instruction in the New York public schools.

LOWENFELD, BERTHOLD. *Teachers of the Blind:* Their Status and Salaries. New York: American Foundation for the Blind, Inc., 1941. Pp. 44.

A study of the status and salaries of teachers of the blind made by the American Foundation for the Blind.

MUNSON, GRACE E. and SCHLOERB, LESTER J. *High School Course in Self-Appraisal and Careers:* Teacher's Manual. Chicago: Bureau of Child Study, Board of Education, 1941. Pp. 107.

The authors present a manual for the guidance of teachers in pupil self-appraisal and guidance.

NOEL, FRANCIS W. *Projecting Motion Pictures in the Classroom.* American Council on Education Studies, Series II—Motion Pictures in Education, Volume IV, No. 5. Washington: The American Council on Education, December 1940. Pp. vii + 53.

Deals with the arrangement of physical conditions, selection of equipment, and training of personnel in the classroom use of films in the Santa Barbara schools.

O'BRYANT, CHARLES W. *A Comparative Study of the Status of Public School Administrators in Kansas.* Bulletin of Information, Volume XXI, No. 7. Emporia, Kansas: Kansas State Teachers College of Emporia, 1941. Pp. 43.

Discusses the training, experience, tenure, and salaries of Kansas administrators in various types of schools.

PHI DELTA KAPPA. *Abstracts of Masters' Theses in Education Approved by Kansas State College, 1915–1940.* Bulletin, of Alpha Delta Chapter of Phi Delta Kappa, No. 1. Manhattan, Kansas: Alpha Delta Chapter of Phi Delta Kappa, 1941. Pp. 130.

A brief statement of the title, purpose, procedure and findings for each thesis is given.

SEGEL, DAVID. *Educational Research Studies of National Scope or Significance:* Biennial Survey of Education in the United States, 1938–1940. Office of Education Bulletin, Volume I, Chapter 10. Washington: Government Printing Office, 1941. Pp. iii + 35.

Describes studies of accrediting, city and state surveys, United States Office study of local units, Work Projects Administration studies, the American Youth Commission reports, the Minnesota General College study, the Pennsylvania Study of the relation of secondary and higher education, and others.

SMITH, HENRY LESTER and SCOTT, R. FOSTER. *Legal Relations of Pupils and Parents to the Public Schools of Indiana, Part II.* Bulletin of the School of Education, Indiana University, Volume XVII, No. 5. Bloomington, Indiana: Bureau of Cooperative Research and Field Service, Indiana University, 1941. Pp. 72.

Part II, discussing common law and statutory liability, transfer and transportation of school children, scholarships and other aids, race segregation, church and state, with trends and comments.

THE STAFF OF TOWER HILL SCHOOL, Wilmington, Delaware. *A School Uses Motion Pictures.* American Council on Education Studies, Series II—Motion Pictures in Education, Volume IV, No. 3. Washington: The American Council on Education, September 1940. Pp. viii + 118.

This report is one of a series of the Motion Picture Project of the American Council on Education dealing with the observations and interpretations of the functions of motion pictures in education at the Tower Hill School, Wilmington, Delaware.

NEW MEASURING DEVICES

MCCALL, WILLIAM A. and CRABBS, LELAH MAE. *Standard Test Lessons in Reading for Small Schools.* New York: Bureau of Publications, Teachers College, Columbia University, 1941.

Makes a provision for practice in the major reading skills, for enlargement of vocabulary, and oral expression in connection with pupil discussion of answers.

WRENN, C. GILBERT. *Study-Habits Inventory.* Stanford University, California: Stanford University Press, 1941 revised edition.

The Inventory is a weighted check list of specific study habits and attitudes which high scholarship and low scholarship groups of students possess in differing proportions.

MICROFILM TEXT

Abstracts of the following doctoral dissertations for which microfilm are available for the complete text were received from the Colorado State College of Education:

ARCHERD, FRED S. *Health and Physical Education in Small School Systems.* Ann Arbor, Michigan: University Microfilms, No. 291, 1941.

BRETERNITZ, LOUIS A. *The Extra-Curricular Program of Activities in Selected Three, Four, and Six-Year High Schools in Nebraska.* Ann Arbor, Michigan: University Microfilms, No. 285, 1941.

BROWNING, ELMER ROSS. *A Commercial Occupational Survey of Cities in Eastern North Carolina.* Ann Arbor, Michigan: University Microfilms, No. 287, 1941.

DEVOE, LOWELL S. *Some Factors Related to Selectivity in Secondary Education.* Ann Arbor, Michigan: University Microfilms, No. 289, 1941.

GRAVES, RACHEL V. *An Integrated Guidance Program for the Fourth Grade in Wakefield, Michigan.* Ann Arbor, Michigan: University Microfilms, No. 290, 1941.

LEAF, CURTIS T. *The Construction and Tentative Standardization of Two Semester Achievement Examinations in Business Arithmetic.* Ann Arbor, Michigan: University Microfilms, No. 295, 1941.

MELLON, EUGENE H. *Budgetary Practices in the Public Schools of Illinois.* Ann Arbor, Michigan: University Microfilms, No. 288, 1941.

NICHOLAS, W. L. *What the High School Student of Oshkosh, Nebraska, Does After Graduation.* Ann Arbor, Michigan: University Microfilms, No. 286, 1941.

LOWENFELD, BERTHOLD. *Teachers of the Blind:* Their Status and Salaries. New York: American Foundation for the Blind, Inc., 1941. Pp. 44.

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MELLON, EUGENE H. *Budgetary Practices in the Public Schools of Illinois.* Ann Arbor, Michigan: University Microfilms, No. 288, 1941.

NICHOLAS, W. L. *What the High School Student of Oshkosh, Nebraska, Does After Graduation.* Ann Arbor, Michigan: University Microfilms, No. 286, 1941.

PHELPS, WILLIAM NEAL. *Development of a Guidance Program for High School Boys Using a Discussion Group Technique.* Ann Arbor, Michigan: University Microfilms, No. 296, 1941.

ROSS, WILLIAM R. *Recent Trends in Report Cards and Reporting Systems in the Elementary School.* Ann Arbor, Michigan: University Microfilms, No. 292, 1941.

ROSS, WILLIAM R. *Report Cards and Reporting Systems in the High School.* Ann Arbor, Michigan: University Microfilms, No. 293, 1941.

ROSS, WILLIAM R. *The History of the Trinidad State Junior College from 1869 to 1939.* Ann Arbor, Michigan: University Microfilms, No. 294, 1941.

The following abstracts for which microfilm copies of the entire text are available were received from Pennsylvania State College:

ARMSTRONG, FRED EUGENE. *Characteristics of Teachers of Vocational Agriculture—A Study to Facilitate a More Careful Selection of Candidates for Teacher-Training in Agriculture.* Ann Arbor, Michigan: University Microfilms, No. 240, 1941.

FREDERICKS, JOHN WYNN. *Gaps, Overlappings, and Other Weaknesses in Undergraduate Professional Training in Physical Education as Experienced in Practical Situations.* Ann Arbor, Michigan: University Microfilms, No. 229, 1941.

WARREN, LEE DONALD. *A Social Studies Program for the Non-Academic Pupil.* Ann Arbor, Michigan: University Microfilms, No. 227, 1941.

Research News and Communications

Address all research news and communications to Carter V. Good, Teachers College, University of Cincinnati, Cincinnati, Ohio.

Commission on Teacher Education.—Members of the Commission staff have given major attention during the summer months to workshop activities. Roughly half of the universities, colleges, and public-school systems associated in the cooperative study of teacher education held workshops this year, largely though not exclusively for their own personnel. Two of the major projects in the all-state program, involving Michigan and upstate New York, likewise conducted workshops mainly for their own groups. Regional workshops in teacher education were sponsored by the Commission in cooperation with Northwestern University, George Peabody College for Teachers, and Stanford University. A specialized workshop on human development and education was similarly carried on at the University of Chicago.

Three of the papers presented to Commission audiences at different times during 1941 have now been assembled as a pamphlet under the title, *Culture and Personality: Three Lectures to Educators* (50 pages, fifteen cents). The articles are "Potential Contributions of Cultural Anthropology to Teacher Education" by Ralph Linton of Columbia University, "Children in the World Today" by Mary Shattuck Fisher of Vassar College, and "The Status of Modern Youth" by W. Carson Ryan of the University of North Carolina and of the Commission on Teacher Education. The pamphlet may be secured from Commission headquarters, 744 Jackson Place, Washington, D. C.

The Commission has been instrumental in the publication of two volumes that have come off the press since July, 1941. The first of these to appear, *Current Practices in Institutional Teacher Placement* (186 pages, $1.50), was published by the National Institutional Teacher Placement Association and was written by thirty-five of its members. Together with presentations of basic principles in the field and a brief survey of current major trends, short descriptions are offered of actual procedures in more than twenty institutions—including universities, liberal arts colleges, and teachers colleges—and cooperative undertakings in six states and the North Central Association of Colleges and Secondary Schools. The editorial committee consisted of Ralph F. Strebel of Syracuse University (chairman), Earl W. Anderson of Ohio State University, and John Douglas Leith of Teachers College, Columbia University. Copies may be ordered from Mrs. Mary B. Bondurant, secretary, National Institutional Teacher Placement Association, Box 934, Athens, Georgia.

The second volume to be published last summer with the Commission's aid

is a report on the teacher-training program developed at Ohio State University. Like the enterprise it describes, the book represents group thinking and is actually the work of some sixty staff members of the College of Education. Under the title, *Adventures in the Reconstruction of Education* (290 pages, $1.50; in lots of five or more copies, $1.25), descriptions are given of the College's effort to reconstruct its plan of teacher education, the initial attempts and fundamental assumptions of the program, and its growth to the present stage of development. Emphasis is given to the work in student orientation and guidance, the laboratory concept in education, field services to schools and communities, graduate work, the experimental attitude, evaluation, and democratic administration. The editing was done by Arthur J. Klein. The book may be ordered from the university bookstore, Ohio State University, Columbus, Ohio.

Teacher Examinations.—The results of the 1941 examinations are reported by David G. Ryans under the title of *Measuring the Intellectual and Cultural Backgrounds of Teaching Candidates*, a bulletin of the Cooperative Test Service, 15 Amsterdam Avenue, New York City. The summary of the report follows.

The second annual edition of the National Teacher Examinations was administered on March 14–15, 1941, in 64 centers and 10 subcenters throughout the United States. One hundred and seventy-two school systems cooperated in the project by indicating their endorsement of the 1941 National Teacher Examinations. A total of 4,718 candidates were examined. Transcripts of examination records were sent, at the request of candidates, to the superintendents of over 200 school systems and to the officials in charge of teacher education at approximately 250 colleges throughout the country.

The 1941 edition of the National Teacher Examinations consisted of completely new tests covering such areas as reasoning ability, understanding and use of the English language, general cultural information, understanding of professional points of view and teaching methods, knowledge of contemporary affairs, and mastery of the particular subject matter to be taught by the candidate. Scores on the 1941 examinations were equated so as to be directly comparable with scores on the 1940 edition. A special Report Card was used in reporting the results to the candidate and to the recipients designated by the candidate. Examination scores were punched into the cards, which had been previously signed by the candidate. The candidate's score on each test appeared in printed form on the face of the card, and a profile of the candidate's scores was represented in columns on the reverse side of the card.

The findings of an analysis of the 1941 examination results may be summarized as follows: (1) The scores of the 1941 candidates were quite similar to those of the 1940 group. (2) The average scores on the Common Examinations of groups of candidates classified by "first teaching preference" show considerable variation from group to group. (3) Candidates with extended teaching experience did slightly better than candidates with lesser amounts of experience. (4) The commonly found sex differences in test scores were observed with regard to high school teachers, but higher average

scores on all tests were shown by the men in the group interested in elementary teaching. (5) Candidates holding higher degrees showed slight advantage on the tests over candidates with less training. (6) Examinees who were available for employment but were unemployed at the time of the examination did not differ materially in test scores from those who were employed. (7) Candidates who took the examinations in 1940 and repeated them in 1941 showed slight gains in score, the gains being more pronounced for candidates with higher original scores; the two forms of the examinations given one year apart showed a reliability coefficient of 0.95. (8) Intercorrelations between the test scores in the 1941 battery indicate that while three common factors are probably involved (verbal ability, non-verbal reasoning ability, and awareness of social problems and contemporary affairs), each examination contributes uniquely to the pattern of the candidate's ability and cultural achievement.

Conclusions are limited to the group tested, a group in which a selective factor may be operating as compared with teachers in general.

Certain of the advantages of the Teacher Examinations in the selection of candidates and questions with regard to various issues are reviewed.

The National Teacher Examinations will be administered for the third time on January 2–3, 1942. The last day for receiving regular applications from candidates is November 29, 1941. Lists of 1942 examining centers and cooperating school systems will be published at a later date and may be secured from any Local Examiner or from the central offices of the National Committee on Teacher Examinations.

Cooperative Study in General Education.—The primary aim of the colleges associated in the Cooperative Study in General Education is to effect improvements in their respective programs of general education. The exploratory period of the Study led to the development of several major projects, each of which involves the study of a cluster of related problems in which most or all of the colleges in the Study have a strong interest. The several major projects have in common the purpose of determining the needs of students that a program of general education should seek to meet. The concept of "needs" in brief is that a need is the difference between *what ought to be* the resources of the student and *what are* the resources of the student. The former involves value judgments growing out of philosophizing; the later involves fact finding to determine present status through inventories, interviews, and other evaluation procedures.

Student Personnel and Counseling.—Under the leadership of John L. Bergstresser of the central staff of the Study, the student personnel workers in the colleges are seeking to improve the educational effectiveness of counseling. As a basis for improvement the personnel workers want evidence showing for various areas of human experience the student's practices, information, interests, beliefs, abilities, and skills. They are interested in areas of human experience such as "personal-social relations—getting along with people," "vocational orientation and adjustment," "physical well-being," etc. At the present time evidence is being gathered and analyzed

as to the concerns or difficulties, and activities and interests of students, in the area of "personal-social" relations. As one of the ways of securing the desired evidence the members of the personnel group have developed cooperatively and are using two inventories; namely, *Inventory A: Self-evaluation of Personal-Social Relations,* and *Inventory B: Self-inventory of Activities and Interests Involving Personal-Social Relations.*

Social Sciences.—Under the direction of Earl S. Johnson of the central staff the teachers of social studies are seeking evidence that may serve helpfully as a basis for improving their educational effectiveness. This group is concerned with curriculum, evaluation of student achievement, and teaching practices. As one means of securing part of the evidence they desire, the teachers of social studies have developed cooperatively and are now using an *Inventory of Social Understanding.* In each of the various categories (e. g., "characteristics of a democratic society," "the mutuality of the relation of capital and labor," "the myth of the self-made man," etc.) the inventory secures responses to indicate the student's idea as to the degree of truth or falsity in a large number of statements, some of which are statements of "fact" (what is) and some of which are statements of "preference" or "moral judgment" (what ought to be). In so far as possible, statements are expressed in the "tongue" or vernacular that the student hears and uses in non-academic situations. Furthermore, they are all cast in the indicative mood, because it was felt that if statements of preference employed words such as "ought" and "should," they would reveal differences which it was desired that the student himself should identify. Analysis of responses to the inventory affords understanding of the student regarding such matters as the ability to distinguish fact from preference, the breadth and reliability of knowledge of society, the consistency of the students' views with each other and with evident objective facts, etc.

Humanities.—Under the leadership of George E. Barton, Jr., Harold B. Dunkel, and Walker H. Hill, of the central staff, the humanities instructors in the colleges in the Study are trying to improve their contributions to general education. They are at present concentrating upon the collection of evidence concerning students' philosophies of life and artistic tastes. As a basis for improvement in their programs, teachers want evidence that will show them to what extent their students have information, interests, beliefs, practices, and abilities which they need for the planning and living of "good lives." They particularly want to be able to study these various types of student resource *in relation,* both before and after instruction. They are making a beginning in the collection of this evidence by developing inventories of student beliefs in various major fields of human experience. In one project, teachers of philosophy and religion are studying the central beliefs that constitute each student's "design for living" or philosophy of life. In another, teachers of visual art, literature, and music are studying the beliefs that govern students' aesthetic tastes and students' use of the arts in their lives. As results from these studies become available, teachers are trying to use them to judge the effectiveness of their programs of instruction and to improve these programs.

Science.—Under the direction of Louis M. Heil of the central staff the science instructors in the participating colleges are attempting to gather that evidence which will lead to a more rational development of science courses for purposes of general education. The evidence to be obtained deals with various types of problems of living (personal health, home and family living, consumer problems, etc.) as well as with the ways in which such problems occur. This evidence is to be obtained from the students entering college by the use of a series of inventories. The first of these inventories to be developed involved problems of personal health. During the past year the health inventories have been used first, to identify the adequacies and inadequacies of freshman students as a group, and for individual students; secondly, to identify the effectiveness of the instruction in meeting health needs. A second series of inventories dealing with the problems confronting a person as a citizen (socio-civic problems) will be developed during the coming year. Another aspect of the science work is the development of curriculum materials. This work takes the form of a cooperative planning of student projects or investigations and the development of materials designed to improve the use of science motion pictures.

Administration.—Under the leadership of R. W. Ogan, Associate Director of the Study, who provided this progress report, the colleges and the central staff are exploring ways of making the research activities and their results directly helpful in improving practice. A major problem which is generally recognized is that of making potentially useful experience actually useful. It seems clear that the accumulation of research evidence is a necessary but not a sufficient condition for effecting improvements in programs of general education. The effectiveness of the local college programs of continuous self-examination proves to have the utmost significance in determining the actual helpfulness of the resources of the Study. Analysis of experience in the Study and elsewhere suggests principles, courses of action, and illustrative devices that are relevant to the problem of improving programs of general education. The project aims to clarify the issues of philosophy and psychology that are usually involved in building democratically a particular program of general education. The preparation of a report on the administrative aspects of improving the effectiveness of a program of general education is in progress.

Lists of materials thus far prepared by the Study may be obtained by addressing the Cooperative Study in General Education, 6010 Dorchester Avenue, Chicago, Illinois.

Occupational Adjustment Study.—The task of aiding youth to become better adjusted occupationally is one of the most difficult problems that confronts the American secondary school. Having a keen interest in this problem, the National Association of Secondary-School Principals during the past several years have been directing its attention to the discovery of instruments and techniques that would best help the school to assist its pupils to adjust themselves in so far as possible to their occupations after they leave school. Through a grant of money for two years from the General Education Board, the Implementation Commission appointed by the Associa-

tion, under the chairmanship of Will French of Columbia University, began an intensive study of this problem during the school year, 1939–40. The Occupational Adjustment Study was set up and carried on under the direction of Edward Landy, now director of guidance, Montclair High School, Montclair, New Jersey.

During the year, 1939–40, schools were chosen in which a follow-up program was inaugurated. As an outgrowth of the experience gained through this project, a plan of follow-up was devised. Four forms were developed as instruments of the plan—a Follow-Up Record Card, an Employer's Interview Card, a Follow-Up Interview Schedule, and a Post-School Inventory Schedule. This was reported in *Occupational Adjustment and the School,* Bulletin 93 (154 pages, $1.00), published November, 1940, by the National Association of Secondary-School Principals. During the school year, 1940–41, a try-out of the plan was made in more than two hundred secondary schools in all parts of the country. Staff representatives visited forty of these schools to make a special study of how the plan worked. As a result of this experience the forms and procedures were revised. The new forms and an account of the revision program are described in the November, 1941, issue of the *Bulletin* under the title, *The School Follows Through,* (approximately 120 pages, $1.00). Hundreds of schools are using these forms as a means of determining important facts about their school-leavers so that their school programs may be adjusted and thus be made more effective.

The initial installation of the complete plan any year involves the following activities. The suggested plans have purposely been made flexible so that the individual principal can easily modify them to suit his own purposes and his available time and energy. Not all of these activities, however, need necessarily be carried out during the first year.

1. Transfer selected school data from the permanent records to the Follow-up Record cards for all school-leaving youth for three non-consecutive years.
2. Distribute Post-School Inventories (questionnaires) to all of these school-leavers and check on non-returns.
3. Transfer data from the returned Post-School Inventories to the Follow-Up Record cards.
4. Arrange appointments and interview a selected sample of these school-leavers.
5. Arrange appointments, and interview a selected sample of the employers of these school-leavers.
6. Make tabulations and analyses of the data on the Follow-Up Record card and the interview schedules in an effort to draw inferences concerning the effectiveness of the school program.